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UNIVERSITY OF ALBERTA

A STUDY OF MOTHERS' UNDERSTANDING AND USE OF NUTRITION IN PERI-URBAN NAIROBI, KENYA

BY

©

JUDITH N. WAUDO

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN
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The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "A study of mother's understanding and use of nutrition in peri-urban, Nairobi, Kenya" submitted by Judith Ndombi Waudo in partial fulfillment of the requirements for the degree of Doctor of Philosophy in International and Intercultural Education.

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ABSTRACT

Malnutrition is a serious health problem in Kenya as it is believed to affect a third of the child population. The causes of malnutrition are many and complex. A significant proportion of the population is malnourished as a consequence of inequalities in the distribution of incomes and land, high population growth rates, drought, disease, lack of nutrition education, poverty, foreign debt servicing and more recently, the impact of the structural adjustment programs imposed by the international financial institutions such as the World Bank and the International Monetary Fund (IMF).

The urban poor are particularly vulnerable to malnutrition because of the gradual erosion of their purchasing power as a result of inflation, unemployment and underemployment. The objectives of this study were to investigate women's understanding, use and interpretation of nutrition from the nutrition education program they were attending and to assess the social and economic factors influencing their understanding and use of nutrition. The study took place in a peri-urban low-income community in Nairobi, Kenya. Nine mothers who were attending a community-based nutrition education program participated in the study since it was an exploratory study. An ethnographic approach entailing a semi-structured interview schedule, observation and documentation were used as data collection devices.

The findings of the study showed that mothers understood nutrition but were unable to use that knowledge in feeding their families because of poverty. Mothers indicated that their children routinely took diets which neither satisfied their notions of good nutrition nor their personal food preferences. Their concerns was "getting enough to eat". The social and economic factors that influenced their understanding of nutrition were poverty, unemployment, lack of education, poor sanitation and poor housing conditions. The health and sanitation environment had the most impact on the health of the children as evidenced by high rates of morbidity among children. These results indicate that nutritional status will not be improved by nutrition education alone but by improved incomes, good sanitation and empowerment of mothers. The study posits that unless certain aspects of the country's socio-economic, political and cultural structures are transformed in order to make it possible for poor people to have access to food and incomes, nutrition efforts are meaningless. A contextual nutrition education model developed on the basis of this study offers some guidelines for professionals working with low-income population. It is hoped that Kenyan policy makers and program developers will take into consideration the context of low income people's lives when designing intervention programs.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

Statement of the Problem

Kenya, with an area of 580, 370 square kilometres and a population of 24 million people, is located on the east coast of Africa. Its population is characterized by high child dependency rates and a high growth rate. Economically, Kenya is considered one of the world's poorest countries with an average Gross National Product (GNP) of $330 per annum. There are however, large income disparities between the poor and the rich and between rural and urban areas. Politically, Kenya has been a democratic country with a one party system of government until recently. With pressure from the west, it adopted a multi-party system of government in 1990. The country is very diverse in terms of cultures and traditions, including among its people 42 indigenous tribal groups. About 50% of the people are literate. However, education through the eighth grade is now compulsory and the government is encouraging literacy for adults.

In years of favourable weather, Kenya is virtually self-sufficient in food production, although a few items such as wheat and rice continue to be imported. In the last 15 years, droughts have, from time to time, disrupted agricultural production to the extent that the government has had to resort to massive food imports. Apart from climatic problems, agricultural expansion is hindered by factors such as soil constraints, crop and animal diseases, population pressures on the available land, and the fact that food production is restricted mainly to smallholders while large farms concentrate on cash crops.

Nutrition programs, namely, nutrition education, supplementary and fortification feeding, and programs aimed at increased food production are currently being offered in Kenya. Many of these programs are offered by the Ministries of Health, Culture and Social Services, Education, Economic Planning, and several non-governmental organizations. Emphasis in all of them is on the child and mother and they are rehabilitative rather than preventive in nature. Most of these programs do not involve the mothers in the program planning, implementation and evaluation, nor do they address the root causes of malnutrition. Rather, they concentrate on treating symptoms such as deficiency diseases.

What is repeatedly missing in these programs is attention to the context of the participants' existence. Campell and Desjardins (1989) suggest that a detailed appreciation of the household context is essential for both nutritionists and the families themselves for an improvement to occur in the nutritional status of low-income families.There is need to consider the background, examine their poor health status, and examine further the causes of malnutrition and the ultimate consequences of it.

Rationale for the Study

This research resulted from a concern about malnutrition and out of the conviction that policies and programs designed to address nutrition problems need to be based on some understanding of the situations, priorities and coping strategies of low income families. It partially addresses the lack of information in Kenya pertaining to the socio-economic context of malnutrition from the recipients' perspectives.

The study was timely because no study had been conducted to obtain the participant's views of nutrition intervention programs in Kenya. Moreover, most nutrition intervention programs have been based on rural experiences. Therefore, effects of such programs on the urban population which this study addressed generated useful insights for future planning.

In the literature, there are few studies which examine the nature and range of food problems experienced, or the interactions of factors which influence the food expenditure, food selection patterns and nutrition of low-income families in developing countries. Furthermore, there has been little research that examines the interrelationship between understanding of nutrition, food behaviour and participation in nutrition education programs. Given the paucity of studies with an integrated focus on nutrition and poverty, it was appropriate to begin with exploratory and descriptive research methodologies to examine food problems and nutritional practices.

A peri-urban low-income group was chosen for this study because they were a nutritionally vulnerable group and, considering the current wave of economic crisis in Kenya, an economically and politically marginalized population. Mothers who were attending a nutrition education program in one of the six peri-urban nutrition centres in Nairobi were identified for the study. Each of the women attended the program because she had a malnourished child within the family, and because of her extreme poverty.

A study based on ethnographic approaches, including a semi-structured interview schedule, observation, and documentation was conducted to gain an insight into the context in which the mothers themselves understood and used nutrition knowledge obtained from the nutrition education program.

Purposes of the Study and Research Questions

The objectives of the study were to investigate the women's understanding, use and interpretation of nutrition from the nutrition education programs they were attending and to assess the social and economic factors influencing their understanding of nutrition. Having identified the main objective of the study, a number of specific purposes and research questions were spelled out to guide the research. These were:

1. To assemble relevant information on the nature of nutrition education received by low-income mothers in peri-urban Kenya;
2. To investigate how nutrition education is being used by these mothers in feeding their families;
3. To investigate the perception women have of nutrition education in Kenya in relation to the larger social, economic, and political context of adequate nutrition;
4. To develop a conceptual framework for improving nutrition education for the low-income urban population in Kenya.

In addition to the overall purposes, a number of questions were identified to further guide the research. The following questions formed the basis of this study of mothers' understanding and use of nutrition in peri-urban Kenya; the methodology used for addressing the questions will be discussed in chapter 4.

1. What is the nature of nutrition education received by low-income women in peri-urban Kenya?
2. How adequate is this nutrition information for these mothers in terms of the conceptual framework developed ?
3. Is that information/knowledge and the educational process used to transmit it sufficiently adequate to change the nutritional status of women and their families?
4. To what extent do these mothers understand and use this nutrition information in feeding their families?
5. What are the socio-economic factors influencing the mothers' understanding, interpretation, and use of nutrition education?

Proposed Conceptual Frameworks

Since there is a lack of information pertaining to the socio-economic context of malnutrition from the perspectives of recipients of nutrition education programs, and the nature of the research questions proposed, a qualitative methodology entailing an ethnographic approach was undertaken. Two frameworks were used as perceptual screens for this study; a Critical-Reflection Curriculum Orientation (Aoki, 1981) and the Achieving of Health for All framework (Epp, 1986) adopted by Stachenko (1992) when addressing heart health promotion in Canada. The first views individuals as having the potential to act upon their own world to transform it to meet their daily lives, whereas the central theme of the second is trusting people and enabling them to achieve better health through their own efforts, while ensuring the development of appropriate public nutrition policy.

Both models guiding this research emphasize empowerment philosophy, which Kent (1988) views as an effort to increase people's capacity to define, analyze and act upon their own problems. The three principles that are central to the notion of empowerment (based on Stachenko, 1992, but modified to apply the concepts to nutrition education and promotion) include:

1) nutrition education must address problems that people themselves define as important;

2) nutrition promotion involves effective participation of the public, alongside the expert, in problem-solving and decision making; and

3) nutrition promotion works effectively when in harmony with a public nutrition policy.

Empowering nutrition education encompasses political, social and economic factors that affect nutrition and encourages individuals to come up with their own solution to the problems (Kent, 1988). This approach of Achievement of Health for All has been proven successful in Canada, the United States and Latin America. These examples demonstrate that the issue of malnutrition can be an entry point for a community's broader sustained involvement in nutrition education and general health.

It was anticipated that these models would provide the researcher with a means of reflecting on the Kenyan nutrition education program being examined, and provide a framework for analyzing the women's interview responses.

Significance of the Study

This study was based on the lived experiences of the recipients of a nutrition education program in Kenya and provided rich data on the obstacles to attainment of adequate nutrition. It has resulted in the generation of new insights regarding the rationale used to justify nutrition education programs, and regarding the approaches to these programs in developing countries. In particular, the study illuminated some of the various socio-economic factors that have impeded nutrition education programs in Kenya.

Limitations and Delimitations of the Study

1. The results of this study apply to mothers with malnourished children attending a specific community-based nutrition education program.

2. A study of this nature is limited by the amount of time the investigator is able to devote to obtaining the data.

3. The sample of the present study was small; therefore caution should be exercised in generalizing the findings to other populations. The purpose of this type of research is to illuminate human behaviour, not to provide statistically generalizable findings.

4. The study obtained information on a 24-hour food recall for the purpose of learning about the food patterns, not to assess the nutritional content of the diets.

Summary and Chapter Outline of the Dissertation

The overall purpose of this study was to investigate women's understanding and use of nutrition in feeding their families. The study also sought to assess cultural and economic factors influencing mothers' use of nutrition in peri-urban Kenya. A conceptual model was developed to address nutrition education for a low-income population.

Chapter one has dealt with the background and statement of the problem, purpose of the study, research questions, significance of the study and limitations of the study. Chapter two will present a review of literature on nutritional problems and causes of malnutrition in the developing countries, with specific reference to Kenya. Chapter three reviews present practices in nutrition education and intervention programs designed to address the problem of malnutrition and hunger in Kenya. Chapter four describes the research methodology and also provides a background description of the nutrition centre and community which was the setting for the research. Chapter five presents and discusses the research findings and chapter six addresses these findings in relation to the conceptual model and Home Economics philosophy and practice.

The purpose of chapter six is not only to present a conclusion of the study but to provide a framework for change and recommendations for action. It presents and discusses a contextual framework for nutrition education for the low-income population in Kenya. To develop such a model, the Aoki critical-reflection curriculum orientation and the Achievement of Health for All management models, plus themes generated from the data, were used. This model was developed because it emphasizes grassroots participation in nutrition programs. A summary, implications of the research for the nutrition education practice and research, and recommendations for future planning and research are also presented in chapter six.

CHAPTER TWO

LITERATURE REVIEW: NUTRITION

This literature review chapter concentrates on nutritional problems in developing countries, the nutritional status of the population in Kenya and the causes of malnutrition. This review of literature was undertaken in order to be informed on the content of completed research studies on nutritional problems in developing countries. The chapter which follows addresses a second body of literature, on nutrition education.

Nutritional Problems in the Developing Countries

General Picture of Nutritional Status

Malnutrition, mainly undernutrition, is a major problem in developing countries (Foster, 1992). UNICEF (1990) reports indicate that an estimate of 36% (150 million) of children under the age of five years in developing countries are malnourished according to international standards as measured by the number of children more than two standard deviations below the mean for weight-for-age. Similarly, 39% (163 million) of children of the same age are stunted, meaning that these children are more than two standards deviations below their desired height-for-age, while 8.4% (35 million) of children are wasted, meaning that they are more than two standard deviations below their desired weight-for-height. In short, about one child in three children in the developing countries is suffering from malnutrition. In the case of wasting, which normally indicates acute malnutrition, one child in 12 is affected (UNICEF, 1992). If we look at these figures in relation to the situation of all children in the world, it is estimated that 16% (123 million) of the world's children are severely malnourished (UNICEF, 1990).

In addition to these estimates, other statistics show that the prevalence of small-for-birth weight in the developing countries ranges from 12-50% (Harrison, 1990). Furthermore, Foster (1992), reported that an estimated 340 million people in the developing countries do not have enough food on a daily basis to provide for a diet that would prevent serious health risks and stunted growth in children. For example, the World Bank (1979) report indicated that in Pakistan, 97% of the population were not getting enough calories to meet the recommended daily allowances set by international standards.

Today, however, there are conflicting statements on the trends of the incidence of malnutrition in developing countries. Some sources indicate that the incidence of malnutrition is decreasing in Latin America, while in Africa the problem is on the increase. For example, McGuire (1988) reported that in Latin America, the prevalence of preschool malnutrition in the 1960s was 21.6% and in the 1980s it decreased to 15.3%. In contrast, in Africa, in the 1960s it was 24.6% increasing to 29.5% in the 1980s (Svedberg, 1988).

The regional distribution of malnutrition differs widely. According to UNICEF (1990), South Asia has the highest incidence of malnutrition among developing areas, followed by the rest of Asia, Africa and finally Latin America with the lowest rates. This is related to the high population in all of these areas, but especially Asia. The two Asian regions, that is South and the rest of Asia, account for 75% of the underweight, 66% of the stunting and 66% wasting respectively, of the total number of malnourished children under the age of five in the developing countries (UNICEF, 1990). In Asia alone, nearly one child in two is malnourished because of the high population and underdevelopment.

Furthermore, UNICEF (1990) reports show that half of the world's malnourished children live in the relatively poor countries of south Asia, namely Bangladesh, Laos, Myanmar, Nepal, Pakistan, Vietnam, India and Indonesia. Other countries that are equally affected in terms of chronic and acute malnutrition include Iran, Yemen Arab Republic, Mauritania, Nigeria, Papua New Guinea, Ethiopia, Sudan and Tanzania (UNICEF, 1990).

Rural-urban disparities

Based on estimates from 31 developing countries, the prevalence of malnutrition was found to be strikingly greater in the rural areas (UNICEF, 1990). It should however, be recognized that these figures were not based on the urban areas as a whole and did not distinguish between children in, for example, the more prosperous towns and children in the urban slums. Examining country-specific data on nutrition in urban slums Austin (1977) found that these people were particularly disadvantaged nutritionally. Their caloric intake was less than their rural counterparts. A UNICEF (1985) study in Zimbabwe recognized significant levels of undernutrition in children of all ages in the urban slum areas. Their findings show that in poorer households, children's nutritional status and chances for survival were particularly sensitive to changes in incomes and diets.

Prevalence by age

The prevalence of malnutrition has been reported to be higher during ages from 12 to 36 months of childhood (UNICEF, 1992). This is particularly so because of poor weaning practices. Several studies in the developing countries indicate that children of mothers who breast-feed exclusively during the first six months of life tend to have a lower incidence of malnutrition during this period than those of mothers who bottle-feed (Foster, 1992). Furthermore, mothers who do not adequately introduce additional foods to the infant's diet after the fourth month of life, tend to have a higher incidence of malnutrition in their children. This is because, at four months of age, a baby can no longer rely solely on breast milk to meet all nutrient needs but requires other additional foods such as energy and protective foods in order to grow at an ideal rate.

Malnutrition rates have also been reported to be higher in pregnant and lactating mothers because of their own increased nutritional needs and demands. Evidence is also growing that indicates that old people are a nutritional risk group (Shils, 1988). Therefore, attention in nutrition interventions should be targeted to these vulnerable groups, as well as early childhood (Foster, 1992).

Prevalence by sex

An examination of the prevalence of malnutrition in 39 developing countries reported that malnutrition rates were higher in girls than in boys (UNICEF, 1990). Analyzing data from 94 Latin American villages, Schofield (1979) showed that females aged 0-4 years were frequently more malnourished than males of the same age. Similarly, in South Asia studies on sex disparities indicate that female children were frequently more undernourished than male children (Behrman, 1988). This is corroborated by the fact that infant and pre-school child mortality is significantly higher for girls than for boys, which is attributed to the fact that in Asia male children are much favoured over females. Women too are at a disadvantage in terms of nutrition in India because of cultural beliefs that favour males.

In contrast, in Sub-Saharan Africa, Svedberg (1988) reported that boys were more stunted and wasted than girls. Data from 20 Sub-Saharan countries also show that females are not at a nutritional disadvantage because women are not discriminated against as compared with women in other countries, as for example Asia.

Thus the results of studies on sex disparities seem to be dictated by specific situations which are shaped by religion or cultural differences. For example, in societies which value male children over female, females tend to be more malnourished than males. Nevertheless, these data should be interpreted with caution because changes in nutritional status are, on average, far more difficult to document than one-point-in-time nutritional studies. This is because information is incomplete and definitions are often problematic.

Nutritional Deficiency Diseases

The major nutritional deficiency diseases include protein-energy-malnutrition (PEM), vitamin A deficiency, iron deficiency and iodine deficiency. Each of these will be described in the following text:

Protein-Energy-Malnutrition (PEM)

PEM is the major deficiency disease in most of the developing countries because of its high prevalence and its relationship with child mortality rates, impaired physical growth, and inadequate social and economic development (Foster, 1992). The global magnitude of PEM is difficult to estimate because mild and moderate malnutrition usually is not recorded, and many patients with kwashiorkor or marasmus (the two most common symptoms of PEM) do not receive medical attention. World Bank (1989) reports indicated that between 800 million and one billion persons suffer from some degree of PEM annually. UNICEF (1990) estimates show that around 300 million children below age six have growth retardation related to PEM. And if one uses weight deficit for a given age as an indicator of the present or past growth impairment, then between 20-75% of the children in the developing countries have suffered from PEM. An analysis of 25 different nutritional surveys in Asia, Africa and Latin America show that about 3% of the child population suffer from severe malnutrition and 20% suffer from moderate malnutrition (UNICEF, 1992). These figures however increase markedly during periods of severe food shortages. For example, wars and drought in Africa during the periods between 1984 and 1992 have been contributing factors to famine and malnutrition.

Causes of protein-energy-malnutrition

Primary PEM results from insufficient food intake or from the ingestion of food with protein of poor nutritional quality. These inadequate intakes are almost always linked to conditions such as poverty, ignorance, infectious diseases, and low food availability (Foster, 1992). Therefore, economic, social, biological and environmental factors are the underlying causes of PEM.

Social and Economic factors

Poverty almost always accompanies PEM. As a consequence of poverty, there is low food availability due to lack of the means to produce or buy food. For example, Sanders (1988) in a study on socio-economic factors and prevalence of malnutrition in

Zimbwabwe, reported a high prevalence of malnutrition in children of semi-skilled labourers.

Ignorance by itself, or associated with poverty, is also a frequent cause of PEM. Ignorance regarding nutritional knowledge; misconceptions about the use of certain foods, feeding practices during infancy, weaning and illness, proper child care practices, inadequate hygiene; and food distribution within the family are among the many contributing causes of PEM. A declining rate in the practice and duration of breast-feeding accompanied by poor weaning practices, have been cited as the major contributing factor to infantile PEM. For example, Van Esterik (1986) in a study of infant feeding practices of low income mothers in urban Kenya, reported that infants who were exclusively bottle-fed had a higher prevalence of malnutrition than infants who were breast-fed.

Environmental factors

Overcrowded and/or unsanitary living conditions lead to frequent infection with deleterious nutritional consequences. This is an especially important cause of PEM among the weaning children who frequently develop episodes of diarrhoea (United Nations, 1991). Sanders (1988) also reported that residential crowding as measured by the number of persons per room, and the insecurity of housing tenure was associated with malnutrition.

Rapid population growth and a relatively slow rate of increase in food production have played a major role in jeopardizing the food availability and the nutrition situation in many developing countries (Foster, 1992). Population pressures on fixed arable land, declining productivity and outmoded land tenure systems have already rendered a large number of people landless in many communities. This has created unemployment, and the resultant lack of income and food resources, thereby leading to malnutrition.

Agricultural patterns, climatic conditions and man-made catastrophes, such as wars and forced migrations lead to cyclical, sudden or prolonged food scarcities that can cause PEM in most populations (Foster, 1992). For example, the 1984 famine in Ethiopia and the 1992 famine in Sub-Saharan Africa, due to wars and drought, have been, and are, the worst causes of PEM in that region. In addition to the above mentioned factors, post-harvest losses of food due to lack of and/or poor storage facilities resulting in constant food shortages is also a contributing cause. Studies on African post-harvest losses indicate that as much as 50% of the food produced is lost, due to lack of/or poor storage facilities (FAO, 1989).

Biological factors

Maternal malnutrition prior to and/or during pregnancy leads to underweight infants (Shils, 1988). This intrauterine malnutrition can be compounded after birth by insufficient food to satisfy the infant's needs for catch-up-growth, thereby resulting in PEM. Studies in Gambia on dietary supplementation of Gambian nursing mothers and lactation performance, showed that the nutritional status of the mother during pregnancy not only affected the growth of the foetus, but also determined the lactation performance of the mothers (Pretice, 1980). In this particular study, mothers who were malnourished during pregnancy (especially during the third trimester when the mother is supposedly building reserves for the infant) tended to produce less milk and breast-feed for a shorter period than those who had good nutritional status. With an inadequate nutritional status, a mother is also likely to be deficient in major nutrients such as iron which might expose the infant to anaemia at a very early stage.

Infectious diseases are the major contributing and precipitating factors to PEM (Shils, 1988). For example, Sanders (1988) showed that contracting disease was clearly followed by a greater degree of malnutrition. Those children who had measles or whooping cough were more likely to be underweight and stunted, and similar results were observed for those who contracted diarrhoea. Diarrhoeal diseases, measles and respiratory and other infections frequently result in protein and energy imbalance due to reduced food intake, vomiting, decreased absorption and catabolic processes.

Diets with low concentrations of protein and energy (as occurs with overdiluted milk formulas or bulky vegetable foods that have low nutrient densities) can lead to PEM in young children whose gastric capacity does not allow the ingestion of large amounts of food. Foods with low protein quality (i.e, low content of one or more essential amino acids) will be poorly utilized. Such imbalances can produce anorexia (reduced food intake) thereby inducing PEM.

Vitamin A Deficiency

Next in prevalence of nutritional deficiency diseases in the world, is vitamin A deficiency which is the primary cause of blindness and death in children (UNICEF, 1992). Vitamin A deficiency is endemic in Southern Asia, Africa and parts of Latin America (WHO, 1988). It is estimated that every year between 5-18 million children, mostly in the developing countries, are subclinically deficient in vitamin A to a level that increases their risks of mortality and perhaps morbidity (Unicef, 1990). In addition to the generally high rates of mortality and morbidity due to vitamin A deficiency, one to two hundred thousand children in the world become blind every year from the lack of adequate vitamin A (Sommer, 1987).

The two most common causes of vitamin A deficiency are inadequate dietary intake and bio-availability of vitamin A. Common dietary sources of vitamin A from animal sources include dairy products such as milk, cheese, butter and ice-cream, eggs, fish, liver and other internal organs such as kidney and heart and fortified butter and margarine. The dietary plant sources of carotenoids include carrots, green leafy vegetables such as spinach and amaranth, tomatoes, papaya (pawpaw) and other yellow and orange vegetables and fruits. It is estimated that the overall absorption efficiency of vitamin A from animal sources is 80-90% and from plant sources is between 50-60% (Shils, 1988). In the developing countries, carotenoids represent 90% or more of the total vitamin A intake. Although most of the vitamin A plant sources may be locally available in many countries of the third world, intakes may be limited due to certain environmental factors such as drought and other natural disasters, economic limitations or cultural influences such as established food habits that are against the consumption of green/yellow vegetables Thus reduced absorption, combined with inadequate intake, results in high prevalence of vitamin A deficiency in these countries (Underwood,1990).

The bio-availability of a vitamin refers to the body's ability to make use of it in metabolic processes. The bio-availability of vitamin A is dependent on the protein and zinc status of the individual. Protein and zinc facilitate the transport of vitamin A in the body and therefore regulate its status. Zinc, in particular, is involved in the metabolism of vitamin A through stimulation of hepatic synthesis of retinol-binding protein: a carrier protein for vitamin A and hence its metabolic availability (Shils, 1988).

Iodine Deficiency

Iodine deficiency is prevalent mainly in Asia, Oceania, Africa and South America (Harrison, 1990). Lack of iodine is a major risk for the one fifth of the world's population who live in flood-prone or mountainous regions where iodine has been washed away from the soil (Unicef, 1991). The consequences of iodine deficiency result in the following: a) goitre, which affects between 200-300 million people, b) mental retardation, which affects 20 million people and c) cretinism, which affects about 6 million people annually (Unicef, 1991). This deficiency also causes miscarriages, stillbirths and a high level of infant mortality. Children are mostly at risk because this deficiency causes them to grow up stunted, mentally retarded and to have severe hearing and speech problems (Shils, 1988). For example, foetal iodine deficiency, which is prevalent in the developing world, has a devastating effect on brain development, thereby causing cretinism (Harrison, 1990). Severe iodine deficiency can lead to poor school performance and low productive work, exposing communities to a cycle of poverty and ineducability (UNICEF, 1991).

Iron Deficiency

Iron deficiency anaemia is an extremely prevalent and serious public health problem in the developing countries. It affects all ages especially premature infants and women in their reproductive ages. For example, about 30% (525 million) people, especially women between ages 18-45 years old, suffer from anaemia annually (Unicef, 1991).

There are three main causes of iron deficiency which are inadequate dietary intake of iron, haemorrhage, and the presence of parasites. Dietary sources of iron include red meats, organ meats, beans and legumes, green vegetables such as spinach, kale, chard, collard greens, and other green leafy vegetables. In many countries, animal foods are in short supply so the diet is predominantly vegetarian. Lack of animal protein leads to the risk of anaemia because protein facilitates the absorption of iron in vegetable foods. Also, the body's absorption of iron from animal sources is superior.

The dietary intake of iron must increase to meet increased demands at specific times in the human life-cycle, or a deficiency will result. Two of these time are periods of pregnancy for women of child-bearing age, and the weaning period in small children because the stores of iron in their liver are become depleted.

Loss of blood, resulting in iron deficiency, can occur with haemorrhage or from the bloodsucking activities of some parasites. When this occurs, extra iron is needed for the repair and restorative process. The leading cause of anaemia for women and children in Africa are parasites such as hookworm and tapeworm.

In summary, malnutrition, mainly in the form of undernutrition, is a major problem in the developing countries. The prevalence of malnutrition is highest in Asia and Africa. The major deficiency diseases are protein-energy-malnutrition (PEM), vitamin A deficiency, iron deficiency and iodine deficiency diseases. The causes of malnutrition lie in a combination of poor health conditions, underdevelopment and poor child-rearing practices.

Nutritional Problems in Kenya

Prevalence of malnutrition

Malnutrition, mainly undernutrition, is a serious health problem in Kenya (World Bank, 1991). The main sources of knowledge about the nutritional status of the population in Kenya are four nutritional surveys carried out in 1977, 1978, 1982 and 1987. These data show that a significant and increasingly large proportion (33%) of Kenyan children did not receive adequate food over an extended time period, and as a result, did not achieve full growth potential. They also show that the degree of undernutrition worsened between 1977 and 1987 (Central Bureau of Statistics, 1989) because of lower standards of living, slowed economic growth, poverty and a stagnated agricultural growth rate. Based on these surveys, it was estimated in 1990, that 1.26 million (36%) children under five years of age were to be stunted as a result of being undernourished over an extended period. The extent of child malnutrition for Nairobi alone during the same year was estimated to be 17% of all children. It is also estimated that more than 20% of rural households (more than 3 million persons) do not have enough income to secure for themselves a minimum nutritional diet (World Bank, 1991).

If one uses weight-for-age as a comprehensive measure, in 1982 approximately one third of the children showed mild undernutrition, 26% moderate undernutrition and 6% severe undernutrition (Central Bureau of Statistics, 1989). In certain areas of the country, such as the Eastern province, up to 40% of the young children were malnourished (Central Bureau of Statistics, 1989). The estimates of malnutrition of under the five-year olds as of 1992 was 41% (UNICEF, 1992).

Geographical distribution of malnutrition

The data on stunting for under five-years olds also gives an indication of the geographic distribution of malnutrition. In the 1982 survey, the Coast province had by far the highest rate of stunting, with 36% of the children in the 3-60 months age bracket measuring below 90% of the median height-for-age for the standard population. By the same measure, other provinces, in descending order of severity of stunting, were Nyanza 29%, Western 26%, Eastern 23%, Central and Rift valley 20% (World Bank, 1991). Data for the 27 Districts included in the survey indicated that half of the stunted children were in just seven Districts which were Kilifi, Kisii, Kakamega, Machakos, South Nyanza, Nakuru and Siaya. Most of these districts also had rates of stunting above the national averages.

The major conclusion that can be drawn from the above is that chronic undernutrition is the lot of almost 30% of Kenya's children. It is also reasonable to infer that the problem is increasing both in terms of rates and absolute numbers of those affected because of poverty, infection and lack of nutritional knowledge.

Rural-urban Disparities

The rural nutritional surveys carried out in 1977 found that the incidence of mild and moderate malnutrition was fairly widespread, with one-third of the children surveyed being below 80% of the weight-for-age and weight-for-height index (CBS, 1983). Studies carried out on calorie intake in Nairobi showed that the average low-income person is somewhat malnourished as far as calorie intake is concerned (Nutrition Association of Kenya, 1990). For example, a study carried out in Nairobi on urban nutritional status showed that 52% of the children were malnourished (CBS, 1983). Another study carried out by the Nairobi City Commission (1984) in low-income areas, revealed that chronic malnutrition affected 49% of the children (Nairobi City Commission report, 1985).

The rise in food prices clearly has negative effects on dietary patterns, perhaps most markedly in poor urban households. The explosive increase in the cost and frequent shortages of meats, legumes and oils has already resulted in protein and fat deficiencies. Similarly, calorie deficiency has a negative impact on children directly or through their mother's ante-natal dietary deficiencies. The shift in food patterns has meant less balanced diets and less food. Malnutrition has therefore, grown rapidly in the poor section of the urban areas because of poverty as wages have risen less rapidly than food prices in urban centres.

Seasonality of Malnutrition

Data from the three nutritional surveys show a marked effect of seasonality, with the highest level of undernutrition consistently showing up in the months of February to April, and the lowest in the last three months of the calender year. Although the agricultural cycles are somewhat different in different regions of the country, the worst period of undernutrition broadly coincides with the planting season for maize, immediately before the "long rain" or during the early part of the rains, when vegetables tend to be in short supply and maize supply is low (Central Bureau of Statistics, 1989). Also because of lack of or poor storage facilities, people tend to get rid of surplus food, thereby making themselves vulnerable to famine as a result of poor climatic conditions.

Who is malnourished?

During the first year of life, malnutrition occurs most frequently due to the special food requirements of the young child and due to infection. But because of the poor weaning practices, Van Esterik and Elliot (1986) have shown that malnutrition is more prevalent during the second year of life.

The seven groups with particular nutritional problems are: a) smallholders in the low-potential areas, particularly in the Eastern plateau, where the soil is of poor quality and deficient in moisture, and the distance between water points is long; b) smallholders in the high and medium-potential areas, where the problem is that holdings are so small that the risk-carrying capacity and cash-crop income with which to buy inputs are limited; c) smallholders who produce mainly cash crops and whose problems arise not from inadequate income, but from the fall in the food production and expenditure patterns; d) rural wage-earners, including the landless, whose incomes are too small to provide an adequate diet; e) pastoralists in the arid and semi-arid parts of the low-potential areas, who are at nutritional risk during drought; f) the urban poor, whose problems are primarily low incomes and partly a nutritional sub-optimal expenditure pattern and g) pregnant women and young children who may suffer additionally from poor intra-family food distribution (Ghai & List, 1979).

Major Deficiency Diseases

As with the developing countries in general, in Kenya the most common deficiency diseases are protein-energy-malnutrition (PEM), anaemia, vitamin A deficiency and iodine deficiency. Studies indicate that 20-30% of the preschool children suffer from moderate PEM and that the prevalence is higher in poor households (Van Esterik & Elliot, 1986). The fourth Kenyan Development Plan, published in 1979, estimated that 3.29 million persons in the smallholder population, 0.24 million underemployed urban dwellers and 0.67 million pastoralists suffer from some degree of PEM (House & Killick, 1981). PEM is found mostly among children of preschool and school age, infants, and among pregnant and lactating women (Oniang'o, 1986). Nutritional anaemia is also prevalent in children and adults, and is believed to affect one-third of the entire Kenyan population. It is mostly prevalent in the warmer and malaria afflicted areas of the country, such as Western province and is caused not only by malaria, but also by intestinal parasites and iron deficient diets (Kenya Government, 1988). Vitamin A deficiency is also prevalent in the preschool age group and has been reported to be a problem of public health significance in many areas of Kenya (Central Bureau of Statistics, 1983). Endemic goitre due to lack of iodine is still prevalent in some hilly regions of the country (Unicef, 1990).

Malnutrition and Child Mortality

There is a two-way interaction between malnutrition and child mortality (that is mortality between birth and age 14). Since the early 1950s, child mortality has declined substantially from a level of 250 per 1,000 in 1950 to a level close to 100 per 1,000 in 1980. The under five mortality rate today is 108 per 1,000 (Unicef, 1990). Despite the decline, one in every three deaths in Kenya is a child under five years of age, compared with one in twelve in high income countries (World Bank, 1991). An estimated one third of the reported childhood deaths have undernutrition as a contributing factor (Kenya Government, 1988). Most children die of multiple causes; the combined process of poor diets and recurrent infections which cumulatively retard growth, lead to wasting and progressively wear down the resistance of the child.

Data used to examine child mortality among socio-economic and cultural groups in Kenya show that the type of residence, maternal and paternal education, ethnicity and religion have significant effects on child mortality (Venkatacharya, 1991). Children who lived in the rural areas and whose parents had no education were more likely to die at an early age than children who lived in the urban areas and whose parents had secondary or university education. In Nairobi, mortality rates among the preschool children in 1990 ranged from 41-51 per 1,000 in the most prosperous 10% of the city to 109-152 per 1,000 in the poorest areas (Unicef, 1990).

Socio-economic/ Cultural Factors and Nutrition

This section of the literature review focuses on factors such as the economy, international financial forces, employment, incomes, poverty, environmental and demographic factors, food production, food aid, education and food, and women and nutrition with respect to their impact on the nutritional status of disadvantaged Kenyans.

Food is so vital to the social and economic well-being of a people that no society should be vulnerable with respect to this basic resource. However, in Kenya, food insecurity is not simply a question of food scarcity in aggregate terms. Inadequate logistical capacity, poor communications especially between rural zones, socio-political biases and skewed patterns of distribution are important factors (Barkan, 1984; Hopkin & Puchala, 1978; Nicholson & Nicholson, 1979). In addition environmental degradation, demographic factors, reduced food production and poor governmental policies are some of the causes (Eberstadt, 1981; Chambers, 1989).

Furthermore, a hostile international economic environment has continued to undermine the ability of African Governments to sustain the development of their economies (Swift, 1989; World Bank, 1991; Wisner, Weiner & O'Keefe, 1983). Certain measures taken by these governments, with the support of international financial and economic institutions such as the World Bank and the International Monetary Fund (IMF), to stabilize and adjust their economies have for the most part served to aggravate the social crisis. As a result, large segments of the people that were already disadvantaged, including women, children, small farmers and poor rural and urban wage workers, have suffered real misery. In Kenya specifically, a combination of these internal and external factors are the major causes of hunger and malnutrition. As a result of these prevailing factors, Kenya finds itself in a very precarious situation.

Economic Structural Imbalances

Many authors agree that the root cause of malnutrition in Africa lies primarily in the structural imbalances and weaknesses of the African economy (Coughlin & Ikiara, 1991; World Bank, 1991; George, 1988). A major feature of the structural problem is that production is dominated by export-oriented agricultural commodities. For example, in Kenya, cash crops such as tea, sisal and coffee dominate the agricultural sector. Although agriculture accounts for 60-80% of Gross Domestic Product (GDP) and provides the livelihood for more than 75% of the population, its food production sector is characterized by rudimentary production techniques, poor conservation and processing technologies, insufficient price incentives and inadequate marketing and other basic social and economic infrastructure (Barkan, 1984; Ghai, 1973). Furthermore, the Kenyan economy is heavily dependent on external sources both for major factor inputs for development such as capital, equipment and expertise, and for major revenues derived from export, as expressed by George:

> The national economy, once protected is today literally controlled. The budget is balanced through loans and gifts, (while) every three to four months the chief ministers come to the mother countries fishing capital.... The former colonial power increases its demands, accumulates concessions and guarantees and takes fewer and fewer pains to mask the hold it has over the national governments. The people stagnate deplorably in unbearable poverty. (George, 1976: 88)

This has made both economic growth and consumption greatly subject to to the vagaries of the international economic and socio-political environment. When faced with world economic recession as was the case in 1980-1982, and an unprecedented drought emergency from 1983 to present, the structurally weak and mis-oriented economies, which admittedly also suffered from poor management, succumbed to a major crisis with a precipitous decline in the living standard of the people (United Nations, 1989). This resulted in starvation and malnutrition among the poor population due to the lack of money or resources to acquire adequate food security at the household level. The situation has continued in varying degrees up to the present. Economic growth has decelerated since the 1970s from a GDP of 3.3% per year to 0.8% in 1987 (United Nations, 1989). Agricultural growth has declined since the 1970's as a result of periodic droughts and high population growth rates (United Nations, 1989). Furthermore, inflation rates have risen while real wages have declined considerably over the years (Kenya Government, 1988).

Combined with all the foregoing structural weaknesses identified in the economy, poor economic growth has resulted in serious declines in per capita income, which fell by an annual average rate of 3.4% between 1980 and 1986. Per capita consumption also fell by as much as 14% in the 1981-87 period (Kenya Government, 1988). A sharp rise in inflation and shortages of essential goods and services pushed up prices beyond the reach of most of the workers. Thus while real wages declined by an average of 19% between 1980-86, prices increased by 18.9% in 1986 (United Nations, 1989). The result has been an intolerable reduction in living standards and increasingly advancing poverty.

The contraction of the Kenyan economy was aggravated by an interrelated set of external factors, particularly the collapse in commodity prices, the debt-servicing burden and diminishing resource flows, just to mention the most obvious ones (Sandbrook & Barker, 1989). Kenya depends heavily on three export commodities for its foreign exchange earnings, and so when there is a decline in prices for these commodities, the country loses out on the much needed foreign exchange to import food during times of food shortages. For example, between 1980 and 1986, Kenya lost out on earnings from exports due to the sharp decline in the export prices of its primary commodities. At the same time, external debt of the region has risen from $150 billion in 1983 to $218 billion in 1987 (George, 1988). Debt servicing is becoming one of the main contributing factors to food insecurity. Already, Kenya is transferring more capital abroad in debt servicing and other payments than it receives in aid and new loans. Today in Kenya, debt servicing is eating up the funds that were once available for social progress. One of the effects of the debt servicing is that less and less money is allocated to food security.

States like Kenya suffering from a reduction in national incomes and import capacity are susceptible to famine both in terms of long-term famine prevention and in terms of relief, because they no longer are in a position to import food due to the lack of foreign currency. The Kenyan economy remains, despite considerable post-independence efforts, largely agricultural in concentration and external in orientation, major characteristics the World Bank and IMF seek to foster rather than transcend (George, 1988). Anyang'Nyongo observed that:

> The development of Africa, under existing conditions, results far more from closer integration into the world economy.... Rigorous management of financial resources is indispensable for development and democracy in Africa and presupposes the participation of the people in the decision-making process....Full repayments of our country' debts would seriously mortgage our future and deprive Africa of the resources it needs to develop, while the adjustment policies involved might well destabilize the African production and social systems in the long run. (Anyong'Nyongo, 1987: 15)

Thus foreign aid has not only marginalized Kenya, but also has kept it in a debt-trap almost impossible to escape (Bernstein, 1991).

Environmental and demographic factors

Drought has also affected food production in the country. As a result of drought, livestock suffered heavy losses, and food production shortfalls, especially in cereals, were as high as 30 to 50% (United Nations, 1989). Rural areas with chronic poverty and inadequate development support and poor peri-urban areas bore the brunt of the socio-economic impact of drought. However, George (1976) viewed drought as a catalyst to systematic crisis brought about by integration into the world economic system. She sees drought as a way of fostering Kenyan dependency on the international economic forces and weakening Kenya's ability to cope in terms of food security. Closely related to the prevalence of drought, the phenomenon of seasonal hunger adds a still further dimension to chronic malnutrition (Kenya Government, 1988). This is especially so in parts of Africa where there is only one rain season, as for example, in Kenya where the pre-harvest season is associated with widespread malnutrition (UNICEF, 1984).

Other critics argue that starvation and famine are a result of a systematic breakdown of the socio-economic structures in Kenya rather than an outcome of natural disasters like drought as commonly advanced by modernisation paradigms. For example, Sen (1981) argues that famine emerges from the particular conjunction of colonial legacy, the ineptitude of "development experts" and "human mismanagement of markets" not from natural disasters.

Another major factor that has aggravated the socio-economic situation is the demographic factor. Kenya has the highest population growth in the world at 3% per annum (World Bank, 1991). Although there are slight sub-regional variations in the growth rates, the age distribution is characterized by a high child dependency ratio. According to available statistics, the Kenyan child population (children aged 0-14 years) constitutes 50% of the total population, and the elderly (those 60 years and over) constitutes 4.8% (United Nations, 1990). Thus, Kenya has the world's highest age dependency ratio of 92.9%, compared with 64.7% for the world as a whole (United Nations, 1990). The implications for Kenya are serious in terms of the high demand for subsistence consumption and provision of social services, particularly education and health facilities. The high dependency ratio also exerts a negative pressure on the capacity of the economically active population to save and invest in productive enterprises. It eats up most of the resources of the economically active population, thereby leaving them with very little future investment to fall back on in case of economic crisis, such as during periods of recessions.

This demographic factor has consequences for employment. For example, in Sub-Saharan Africa in the 1980s the labour force has been expanding at a rate of 2.7% per annum (Ndegwa, 1988). As a result, currently, unemployment, underemployment and labour displacement are rife because of the high population growth rates, high rural-urban migration and stagnant economic growth over the past few years.

But George (1976) has reminded us that world hunger is not caused by population pressures, even though these do aggravate the situation. She maintains that even though population could be decreased and food production increased in Kenya, the majority of people would still starve if they continued to lack the purchasing power to pay for their food or the means to produce it; hunger and malnutrition would still affect the same number. In other words, it is lack of equitable distribution of incomes that keeps so many people malnourished not the high population growth. In Kenya, income disparities are wide between the rich and the poor and between urban and rural areas. Thus modifying the existing structure of land holdings and the unequal distribution of resources has a lot more to do with erasing malnutrition than addressing the total population issues per se. Both hunger and rapid population growth reflect the same failure of a political and economic system.

According to George (1976) hunger and population imbalances are both symptoms of underdevelopment. The auther tends to agree with George's argument that hunger is due to lack of equitable distribution of incomes because in Kenya, the structural agricultural policies and the urban-biased and foreign-controlled economy, tend to be contributing factors to the overall problem of malnutrition. This is because such policies tend to discourage adequate food production, thereby resulting in acute food insecurity for the rural and urban poor. Such policies tend to ignore the poor rural majority by providing them with neither incentives to produce nor markets to sell their products.

Rural-urban migration

Due to unequal development patterns, ecological disasters such as seasonal drought, and lack of opportunities such as inadequate employment opportunities in the rural areas, many young and able-bodied men flee from rural areas to urban centres (World Bank, 1991). This has resulted in unemployment, overcrowded cities with overburdened social amenities, and depressed labour markets. On the other hand, the rural areas have been left predominantly with the children, aging males and overworked women to maintain the food production systems and strained social structures (Ghai, 1973; Ndegwa, 1988). This has tended to result in declining food production and a large sector of the Kenyan population turning to markets for their food needs.

As a result of this migration, the informal system of social security has become strained. For example, women and children in the rural areas no longer have husbands/fathers to turn to for social support. Family life has been disrupted by the heavy migration of men, and in an increase of women as heads of households. This has resulted in women especially becoming more overburdened with managing family survival. In other words, migration of the men to the urban areas may well be an attempt to escape from famine, but it leaves behind hungry women and children.

Impact of Stabilization and Structural Adjustments Programs

Because of the economic decline and socio-economic imbalances in Kenya, the World Bank and the International Monetary Fund (IMF) imposed structural adjustment programs. By 1980 Kenya undertook structural adjustment reform measures such as cuts in public investment and government expenditures, freezes or limits in public employment and wages, removal of subsidies on consumer goods especially food and fuel, cost recovery of social services, export promotion through input and incentive provisions, trade and capital liberalization, devaluation and price decontrols. The ultimate goal of those programs was presumably the restoration of conditions favourable to sustained economic growth. However, their dominant feature has been an intense, short-term focus on achieving quick external financial liquidity and recovery of export capacity in the country (United Nations, 1989). The effects of these programs on the people have been devastating, especially with regard to employment, incomes, food, nutrition, health and education.

A fundamental problem of the World Bank and IMF has been the highly sectoral and narrowly economic approach used both in analyzing development malfunctions and prescribing solutions. As such the IMF and the World Bank supported stabilization and adjustment programs, but paid scant attention to the social, political and human aspects of the development crisis (Ndegwa, 1988). The approach was the classic derivative one, whereby economic growth was supposed to lead to social improvement and progress after some span of time. The economic hardships and social conditions of the most vulnerable social groups were assumed to be unavoidable (United Nations, 1989).

The net effects of these programs has been that social regression and human misery have been exacerbated. For example, expansion in exports has been achieved at the expense of food production, which is the means of livelihood of the vast majority of the small farmers, particularly women (Bernstein, 1990; United Nation, 1989). The adjustment drive has reinforced the existing agricultural dualism since imported inputs, infrastructural rehabilitation and producer price incentives have been export-oriented and have benefited mostly wealthy commercial farmers (Bernstein, 1990; Wisner, Weiner & O'Keefe, 1983; Timberlake, 1985). Thus, structural adjustment has not only side-stepped the problem of alleviating rural poverty, it has also made the attainment of Kenya's priority of food self-sufficiency even more illusory.

The plight of the poorer populations has worsened. Their health and nutritional status have been particularly jeopardized by the removal of government subsidies on imported food and the introduction of cost recovery for health care. For example, in Kenya, charges for health services threaten or deny treatment precisely to those who most need it, and it hurts those who are most vulnerable, the poor. The dramatic price increases in food, fuel and essential households commodities has also hit the low-income earners the hardest. Furthermore, the freeze of employment has meant loss of job opportunities. Moreover, since the 'excess' employees removed from government payrolls were mostly the lower grades, they were the least equipped to find alternative employment. Consequently, they have added to the growing crisis of unemployment and underemployment and to poverty mainly in the urban areas (United Nation, 1989). This poverty results from a decline in real incomes as wages fell below price increases (Sandbrook & Barker, 1989).

The adjustment programs have furthermore affected the availability and price of agricultural inputs. For example, the prices of farm inputs such as fertilizers, maize seeds and pesticides have been increased, thus making them inaccessible to the small scale farmer. Both the limited availability of foreign exchange for imported agricultural inputs and the sharply increased prices for inputs such as fertilizer and pesticides have had an impact on output further enhancing dependency (Bernstein, 1990). Moreover, in some cases, subsidies for the purchase of inputs have been withdrawn or reduced as part of the efforts to control public spending. However, Kenya has also allowed the price of agriculture produce to rise. Such measures tend to increase the risk of farming.

Thus the structural adjustment programs have created a human dilemma and a vicious circle of dependency and marginalization. Where some measure of economic growth have been achieved, the country has become ever more indebted and dependent on external financial sources and less capable of delivering to the people the social benefits assumed to be derived from that growth (World Bank, 1991). The financial problems of Kenya have been aggravated by inhospitable trading environments, the weak and declining prices of Kenya's principal export commodities such as coffee and tea, and by inadequate capital flows (Ndegwa, 1988; Sandbrook & Barker, 1989). Although an IMF document on Kenya declares that it wants the country to maintain adequate food supplies and to allow larger exports of agricultural products, it seems clear that it favours the agricultural exports. Furthermore, the Fund contended that the better-off social groups may be affected most adversely by the austerity measures it imposed. But in Kenya, the policies of the past few years have resulted in a heavier burden on the poor, contrary to the Fund's belief (George, 1988).

Food Aid

In Kenya, the trend towards greater reliance on imports was largely the result of expansion of agribusiness in Africa, large numbers of refugees, and continued difficulties with increasing domestic food production. The expansion of agribusiness in Africa has resulted in land alienation. These businesses, through government cooperation, acquire the most productive land for their business and push the smallholders off the land, thus preventing them from growing their own food . Kenya is a classic example of this process.

Del Monte has acquired large tracts of land from the rural poor in order to grow pineapples for export. The net results have been that these agribusinesses have left people powerless and vulnerable to malnutrition, because they no longer have a source of subsistence. Furthermore, George (1976) reported that the incidence of severe malnutrition increased among workers of these agribusinesses because of being underpaid. Yet these corporations claim that they are in Kenya to improve the welfare of the majority of the people.

Civil wars in Ethiopia, Sudan, Burundi and Somalia have caused displacements and famine. This in turn, has resulted in large number of refugees coming to Kenya. Food aid has therefore responded to the direct emergency food needs of millions of affected people, especially the most vulnerable children and nursing mothers. In Kenya, food aid has been regular since the 1970s, when the country was faced with constant food shortages. There have been concerns about the heavy reliance on food aid, because it undermines the chances of attaining food self-sufficiency and has deleterious effects on small food producers and on the food and nutrition security of the poor (United Nation, 1989). Food aid undermines local food production by undercutting prices and enlarging exogenous tastes. Thus, it reinforces the misalignment between domestic tastes and local food production goals (George, 1988). For example, wheat and rice made available through food aid are fast overtaking local staples such as millet, sorghum, cassava and sweet potatoes but cannot be easily produced in adequate quantities because of ecological, technical and economic constraints, especially in Kenya.

Food aid can also be addictive and can be used to free recipient governments from their urgent responsibilities to develop and support the productive capacities and enhance the entitlements of the poor, especially in the rural areas (George, 1988). At present, nearly 90% of food imports go to the socially powerful and vocal urban dwellers, thus underscoring the socio-political dimension of the food and nutrition problem. The rural majority, who are also the most marginalized population, have the least access to food aid.

In other words, food aid has not benefited the rural poor and has done very little to decrease income inequalities. At the same time, food aid deepens Africa's dependency on the world economic system, while it enables donor countries to dispose of their food surpluses without depressing their own domestic markets and incurring the wrath of their powerful agricultural constituencies and lobbies (George, 1976). In this regard, it is instructive that Kenya can receive large quantities of food relief, but never enough assistance to acquire agricultural inputs or equipment and material to rehabilitate health, water and education facilities which are necessary for sustainable food and nutrition security and development.

At present, food aid tends to undermine local organizational capacity by imposing procedures dictated by the desire for efficiency, donor accountability and short-term cost-effectiveness (World Bank, 1991). Local community structures are bypassed whenever relief food is distributed to those who qualify on nutritional status criteria. If local organizational capacity is an important resource in communities, less vulnerable actions such as these, even if they save lives in the short run, contribute to greater vulnerability in the long run (Swift, 1989). Food aid, in particular relief programs, should be used not only to save lives but also to protect assets in rehabilitation programs. Food aid should be used more explicitly to rebuild household and community assets and to rebuild local organisational capacity, if it aims at helping the communities in terms of long-term food sustainability (Swift, 1989).

The cumulative impact of the food aid has been an increase in nutritional disorders among the Kenyan people, partly because the population tends to choose the foreign imported less nutritious foods over the traditional more nutritious foods. This is why Kenya is now making food production its first priority in the country's development strategies. I think that food aid is useful only on a short-term basis but the long-term goal should be to help people foster local food sustainability.

Employment.

Overall employment in Kenya stagnated in the 1980s and the employment situation worsened by 16% between 1980 and 1987 (Ndegwa, 1988). Given the existing structural adjustment impetus, the unfavourable external economic environments and the difficulties of fundamental social changes in the areas of population, income and resource distribution between the urban and rural areas and the rich and the poor, employment prospects look bleak indeed.

The impact of the contracting economy has been felt most severely by workers in agriculture. The serious decline in agriculture is due particularly to the longstanding neglect of small farmers, especially women in the food sector. Inadequate policies to promote rural industries and non-farm development activities, have made the rural areas the major area of employment problems (Nicholson & Nicholson, 1979; Sandbrook & Barker, 1989). Many rural people have been rendered unemployed because they are landless. Those who obtain employment in agricultural sectors are only seasonally employed, for example, during planting and harvesting seasons; the rest of the year they have no source of livelihood. The retrenchment of workers, due to the structural adjustment programs, has also added to the creation of unemployment (World Bank, 1991).

Available data indicate that between 65 and 75% of the unemployed are young people aged 15-24 years who constitute 30% of the Kenyan population (United Nation, 1989). Women are also a very significant group within the unemployed. Moreover, as employment markets become tighter and more precarious under the crisis and adjustments, women face serious job discrimination which compounds the problem.

Another important feature of the unemployment problem is that it is affecting educated Africans more and more, thus destroying the human capital gain made at great financial and social costs by governments and families (Ndegwa, 1988). The poor match between the output of the educational systems and manpower demand in the shrinking economy resulted in 4 to 5 million educated unemployed persons in the Sub-Saharan African region in 1987 (United Nations, 1990). This situation has risen due to an inappropriate educational system that was urban-biased and elite-based and which neglected the rural sector. In general Kenya's employment problem has not been one of a shortage of jobs and open unemployment. Rather the problem is one of slow growth in the number of jobs which yield what is regarded as an adequate wage in relation to the number of people who are looking for such jobs (Ghai & List, 1979). In other words, the problem is one of poverty and inequality, with emphasis on the "working poor," rather than one of the unemployed.

Incomes

Both per capita and real wages declined rapidly in the world economy between 1980 and 1987. The declines were particularly severe in countries undertaking structural adjustment programs. Salaried and wage workers suffered a dramatic loss in the purchasing power of their earnings, but the impact was greatest on the lowest paid, who could barely meet their food needs (United Nations, 1990). Incomes in Kenya for approximately a quarter of the population were too low to provide adequate nutrition for the basic diet (Unicef, 1984). In Kenya, the average real wage declined by 20% between 1981 and 1983 and it is even lower in the 1990s than it was in 1964 (World Bank, 1991). In addition, estimates in 1985 showed that on average, the ratio of urban to rural incomes was 4:1 and the gap was widening (United Nations, 1990). However, a significant aspect of the overall income situation in the rural areas is that the majority of the households have low income opportunities because of the continued neglect of the so-called subsistence sector of agriculture and the low levels of public investments, productive assets and infrastructure in those areas. On the other hand, the urban wage-earners have been unable to protect themselves against inflation and therefore the incidence of poverty among this group has increased (Ghai, 1979).

Poverty

Undernutrition is very much a problem of systemic poverty. In rural areas poverty is related to low output and low productivity in agriculture, as well as to the predominant pattern of land holdings in which masses of land are owned by a few individuals or corporations and the rest of the population are either landless or own few hectares. These are land tenure systems in which large capitalists are favoured in terms of technology, credit and market and the landless have lost out. It is generally acknowledged that the economic crisis and drought emergency of 1983-85, as well as structural adjustment programs, have increased the incidence and scope of poverty in Kenya.

There is no comprehensive data analysis of this poverty but some of the important indicators are worsened malnutrition, high infant mortality rates and famine. The three Rural Nutritional surveys carried out in Kenya in 1977, 1979 and 1982 showed that the number of children who are malnourished increased from 24% to 28%. One should be cautious in interpreting these statistics because of definition and measurement errors, but it is likely these estimates are low considering the inaccessibility of remote rural areas and the financial costs involved in carrying out these surveys. The survey also found that 46.5% of the children surveyed had been sick in the preceding two weeks (World Bank, 1991).

The poor include the small scale farmer, the landless, the urban unemployed, the pastoralists, the informal sector workers and the women (United Nations, 1990). Some figures estimate that 50-75 Kenyas out of every 100 are currently living in poverty (United Nations, 1989). The highest concentration of the poor are found in the rural areas, which is characterized by compounded underdevelopment. World Bank (1991) reported that in Kenya, 70% to 80% of the rural population had incomes below $185 and in 1990, around 3 million people in the rural areas have so little income that they could not afford a minimum nutritionally adequate diet.

Lacking adequate productive opportunities, capacities and assets, the rural and urban poor have borne the brunt of increasing prices in food, medicines, kerosene, transport and other essential goods and services. Food consumption has become inextricably linked to income and employment opportunities resulting from the major social changes, including education and urbanization, that have taken place in Kenya over the past three decades. This trend is contrary to the African traditional agricultural system in which all the food for family consumption was acquired from the farm and everyone had land and was a producer.

I think that the traditional agricultural practices should be maintained because they ensured adequate food security at the household level, unlike the present trend of relying on markets for family food consumption, which has proved unreliable as far as nutritional adequacy is concerned. As the conditions of food production have deteriorated and devaluation and removal of food subsidies have forced prices up, both food-deficit farmers and the urban poor have faced seriously reduced nutritional standards. With their low purchasing power and exchange entitlements, they have been forced to reduce their consumption of food, particularly protein (Kenya Government, 1988).

Sen (1981) argued that the rate of poor people's production activities or endowment (their labour or cash crops) is liable to collapse in relation to staple food prices when there is a shift from a communal to a market economy. When this happens poor people starve, not because there is no food available, but because they can not afford to buy food; the wage labour rates or the value of cash crops is too low in relation to food prices for them to acquire enough calories. He therefore sees this exchange rate failure as the cause of malnutrition in Kenya.

A shift from a "communal" to a "market" economy does, in general, mark a shift toward greater vulnerability to severe hunger. In the case of Kenya, it is people in the pastoral economies that form a major population group vulnerable to such terms of trade failure. Today, Kenya's pastoralists get a large part of their subsistence through market exchanges. Many such poor households spend up to two thirds of their income on food. For the poorest household in Kenya, food expenditure accounted for 66% of the total household expenditure while the national average is 46% (Kenya Government, 1988). Therefore, poverty resulting from structural underdevelopment, inadequate and unevenly distributed incomes is the main cause of hunger in East Africa.

Food Production

The food supply in Kenya has suffered from imbalances between production levels and population growth rates, ecological constraints, backwardness in production and processing, and misguided policies that discriminate against local foods in favour of export-production of externally desired cash crops (Timberlake, 1985). For example, agricultural policy neglected small scale food production for domestic consumption and emphasized the development of export crops. Moreover, the strong interventionist approach adopted often failed because of a lack of policy-making skills of the institutions involved (George, 1976). In one example Kenya interventions in marketing systems have been criticized as excessively inefficient and inequitable, since the domestic terms of trade are against the agricultural sector (Ghai & List, 1979). Furthermore, the largest item on the Ministry of Agriculture's current budget is extension services, which have been biased towards the large scale farmers who seek out and are receptive to advice, unlike the small scale farmers. The agricultural research efforts also tend to neglect food crops, concentrate on high potential areas rather than on areas with low rainfall, and do not analyze traditional farming systems (World, Bank, 1991). That is, research is not designed to meet the needs of the small scale farmer.

Further, agricultural inputs, prices and incentives have not been gender or poverty sensitive with respect to millions of poor, small food producers even though they are the main producers of food in Kenya (Eberstadt, 1981). In particular, women and poor small farmers are constrained in their access to land and credit (Griffin, 1976). Women's role in food production is growing in most parts of Kenya. As farms shrink through inheritance and men turn to outside work or become part-time farmers, women are increasingly becoming full-time farmers. Women in Africa constitute 71% of the labour force in agriculture and yet they have limited access to capital, equipment and transport to markets, which lowers the returns for their labour (United Nations, 1989). Women rarely have the title deeds to the agricultural holdings on which they work, which restricts their access to credit. Besides credit restrictions, women's access to production inputs is further constrained by institutional and social biases against their attending extension and training courses, operating mechanized farm equipment and handling input supply, marketing and personnel matters (World Bank, 1991).

Modern agrarian reform laws have not removed the constraints women face. Large gender inequalities persist, and little progress has been made in providing access to land and the number of landless has increased (George, 1976). Since women tend not to be landowners, they are often excluded from agricultural organizations, such as co-operatives. Moreover, most projects have been planned, formulated or implemented with scant regard for the employment of women, even though they play an important part in food production. Women are also normally left out of agricultural policy-making (World Bank, 1991). In addition, their years of accumulated knowledge about the production of local traditional staple crops such as millet, sorghum, cassava, yams, plantains and sweet potatoes is virtually ignored by modern agricultural scientists, whose new techniques, if properly disseminated at all, find certain resistance for both socio-cultural and economic reasons. This resistance occurs because women view such technology as impractical and inaccessible due to their lack of knowledge in these areas (contrasted to their extensive knowledge in traditional agriculture) and their financial limitations, especially the lack of capital .

In Kenya, prices of agricultural products, in particular food crops, have frequently been kept below their market level creating a disincentive to agricultural production (World Bank, 1991). Moreover, Kenya has tried to maintain low prices for food to benefit urban consumers who are also the more politically vocal part of the population. At the same time, this has helped to keep down urban wages and therefore industrial costs (World Bank, 1991).

The cumulative effect of these practices and policies has been continuing and rapidly diminishing food self-sufficiency ratios in Kenya. Urbanization and urban-biased food policies have influenced consumption patterns towards a growing preference for foreign foods (George, 1988). The technologies developed for Kenya were also not appropriate for African crops and this contributed to the lower long-term rates of growth of food production in Kenya. For example, most of the new hybrid maize seed introduced in the 1970s in Kenya required lots of farm inputs, such as fertilizers and use of pesticides. The maize did well only during good weather and was not easily accessible to small scale farmers because of their economic limitations. The hybrids were biased toward the local elites (commercial farmers) because they have the capital to implement the technology. New technologies are expensive and difficult to maintain. Furthermore, technologies have been intended to reach only the modern farmers who frequently have ties with the political elite. The small peasants who actually produce most of the food have been rendered fundamentally invisible. As discussed above in relation to women, one consequence of the western-oriented technology is that local knowledge has been invalidated through the extension of the mass production process. Technology has displaced local knowledge and as a result local smallholders do not actively participate in food production.

Paradoxically, it is the very poor people who are living on the land that are not eating enough (Sen, 1981). These include the small scale farmers, tenants, squatters and the landless unemployed. These people cannot make a living because of the social inequities that make it physically impossible. They are held back because land is concentrated in so few hands (Griffin, 1976). In Africa three quarters of all the smallholders have access to only 24% of the arable land while the few elite own the balance (Ghai & List, 1979). In Kenya, the average sized land holding in 1981-1982 was 2.29 hectare; since then the availability of high potential land per capita of population has declined markedly and there is growing evidence of landlessness (Kenya Government, 1988). The proportion of landless households in the rural areas was reported as 21.6% in 1978 (Ghai, & List, 1979). Furthermore, the largest holdings produce the least food. Normally a large scale farmer invests as little as possible in his farm and is content with low yields per hectare. On the other hand, the small scale farmer produces heavily from his farm because he invests all his inputs in it. In India studies have shown that production per hectare is 40% higher on farms less than five hectare than of farms of fifty hectares or more. George observed that:

> Existing social structures in the developing countries prohibit people from producing even a fraction of the food they could grow.... if only a small measure of social justice were applied. The poor are neither"shiftless" nor "backward" but they have almost nothing to work with. It is the land-tenure systems that are backward and that are a major constraint upon the productivity of the Third World. Most proclaimed land reforms in developing countries exist chiefly on paper. (George, 1976.p 35)

In other words, it is land distribution which prevents people from producing more food.

The other factor contributing to declining food production is the continued emphasis Kenya has placed on cash crop production. Kenya has devoted its most productive land to cash crop production and neglected life-sustaining food crops. Cash crops occupy enormous quantities of land and they often utilize most of the scarce resources that go into successful farming. For instance, export commodities take priority for irrigation, fertilizers, pesticides and machinery. They also orient intangible inputs of scientific research and financial credit. Lappe and Collins expressed the following about dependency relationships:

> It is obviously not necessary that formal relations of dependency exist for one group to be able to control what another group will produce and decide how much they will be paid. It is true that many former colonies have chosen to continue cash crop agriculture and have been afraid to take the plunge into diversification because they fear their cash revenue in hard currency will drop so far that they will no longer be able to import any necessities from the industrial world. (Lappe & Collins, 1977, p.37)

The countries referred to by Lappe and Collins have concentrated on such crops to secure much needed foreign currency with which to buy industrial goods or for servicing long term debt. In most cases, the prices of these crops have been declining rapidly over the years. Furthermore, the producing countries do not control the international prices for their products, but get whatever they are given. Prices are normally dictated by the developed countries. Imperatively, the developed countries also control the processing technology or the distribution circuits which add to the foods African countries produce (Hopkin & Puchala, 1978; George, 1976).

In the final analysis, cash crop production has been rendered useless these days because cash crop export revenues do not even cover the price of food imports much less industrial goods. One of Kenya's exports, namely tea, in late 1986 was fetching half what it did in 1985, and the price of coffee is lower today than it was in 1976 in terms of the goods it can buy from abroad (George, 1988). This trend has deepened Kenyan economic dependency on the developed countries. They dictate what should be produced and the price for these goods. Kenya has no say in the fate of cash crop exports.

Cash cropping for foreign markets, especially when it involves mono-cropping, leaves agricultural systems under extremely specialized and dependent control. Hence, the population is left highly vulnerable to destabilizing forces. Little economic diversification, externally controlled demand and devaluation, have a dramatic effect on access to food resources (World Bank, 1991). Dependency relationships extend to purchasing food, frequently sacrificing a more traditional diet for imported, more expensive, but nutritionally inferior food. The lower income household, accustomed to exchanging both products and labour, now experiences a reduced food supply due to a reduced level of purchasing power. As Sen (1981) contends, food deprivation generally occurs not because supplies disappear, but because market prices make basic needs inaccessible.

Favouring cash crops has two major far-reaching effects, neither very helpful for feeding the people. The first is obvious; less food is planted because the most productive land and technology is reserved for cash crops. Furthermore, people have no time to grow food because the government regulates the growing of coffee, tea and flowers that are in demand in the west at the expense of food. The second one is more pernicious. Smallholders, even if they get more cash from cash crops, do not necessarily spend that money for food consumption, thereby leaving families vulnerable to malnutrition. This is especially so because men tend to control cash crop money and women don't have much say about its use. Furthermore, incomes obtained from agriculture are spent on consumables produced in the urban areas, rather than reinvested in agricultural production and development.

The increasing number of landless peasants, the concentration of land holdings and the commercialization of agriculture based on wages have all contributed to the decline in food production. Food consumption has consequently increasingly come to be linked to employment and income opportunities, particularly for the poor strata of society in and outside the agriculture sector.

Education

Education became one of the hallmarks of social progress and of independence from the 1960s, when total school enrolments grew faster in Sub-Saharan Africa than in any other developing region. African governments have made heavy overall investments in education, allocating an average of a 20 to 30% share of their national budget to that sector because education was perceived to be a pathway to upward social mobility (Kenya Government, 1988). The following portrays the government's view of education in Kenya.

> The distribution of educational services, both at individual and regional levels, correlates positively with the distribution of income and wealth ....The government has made significant progress towards increasing school enrolment and investing in education. However, the objective of universal access to primary education as well as the relevance of the curriculum and quality of teaching, are still to be fully achieved. (Kenya Government, 1988)

Education was a major element in human capital stock formation and Kenya made notable progress in that regard. However, because of inequality in schools, qualitative deficiencies affected most children in the rural area and among the urban poor. Unfortunately, the formal educational systems inherited from colonial regimes had certain fundamental weaknesses and problems, which mitigated against many of the socially desired goals, and the independent nations of sub-Saharan Africa found it difficult to change these weaknesses. To begin with, the systems became very elitist and extremely costly, the higher up one went on the ladder from the primary to the university. In Kenya, government expenditure per student per year in secondary and tertiary education was respectively 6 and 85 times higher than in primary education (United Nations, 1989). This spending was not justified because only a few people were being educated while at the same time the number of illiterates increased. Moreover, social inequalities were perpetuated by concentrating most of the secondary and higher education institutions of learning in urban centres where they received better resource endowments and allocations. The majority of the rural people were neglected in terms of accessability to schools and infrastructure.

As well, there was the very serious problem of the relevance of the content of education to the cultures and the world of work in Kenya. There was, and still is in many instances, a high foreign content and orientation in curricula, which made them irrelevant if not injurious to the critical concerns of the Africa's cultural identity and self-reliant, self-sustainable development (World Bank, 1991). It has been pointed out that although 80% of the children are likely to end up earning their living from the land, the schools have not played a crucial role in helping to provide them with the skills they would need to survive and improve their standard of living in such environments. Instead, the education offered at any one level is geared to preparing students to move up to the next rung of the educational hierarchy. For example, one of the reasons for the low priority given to agriculture, and especially the small farmer in Kenya, is found in the prevailing educational system as summarized by George:

> Education servilely copied on our own (western schooling) in wholly different conditions has slowed down agriculture development by pushing the best farmers' sons out of farming. The gap between the exploiting town and the exploited countryside increases the rural exodus and the size of the shanty towns. Agriculture cannot find the trained personnel necessary for its modernization. Many extension workers in agriculture have lived in cities, are sometimes European educated and they cannot reintegrate into a rural atmosphere. (George, 1976: 87)

The above weaknesses resulted in a situation in which the ensuing benefits from education did not prove commensurate with the enormous investments made in the previous three decades. There is considerable wastage, manifested in the high levels of unemployed men and women, brain-drain and continuing high illiteracy rates among women and disadvantaged rural dwellers despite education's contribution to the economic development of the region. However, because of decades of rapidly growing enrolments and large educational expenditure, paralleled with slow improvements in the living standards of the average citizen and increasing unemployment, many politicians and educators have come to doubt the benefits of the formal educational system.

Overall, the structure of an educational system is linked to the economic and social character of the society in which it is contained. The linkage of education and development is a two-way process. By reflecting the socio-economic structure of the society in which it functions, the educational system tends to perpetuate, reinforce and reproduce the economic and social structure of society (Bowles & Gintis, 1978). The educational system in Kenya thus acts to increase rather than to decrease income inequalities, because that is how the economic and social structure was set up during the colonial and post independence period. Schooling therefore, is an escape from poverty for only a few.

These weaknesses have resulted in a change in the educational system in Kenya which is now based more on technical subjects and catering to the rural masses, unlike the former urban-biased educational system . The present educational system has only recently been implemented, but it is unlikely that the problem of relevance and unequal distribution of educational opportunities and incomes will be erased unless the entire social and economic structure are transformed and emphasis is paid to the rural sector. Bacchus (1979) stressed that non-formal education will never fully be accepted by the population unless there is a massive structural transformation in the reward system of these societies. As long as the social benefits go to those with formal education, it is not realistic to provide technical education for those of the traditional sector. Technical education would only be accepted if the gaps in incomes were reduced. He suggested that the most appropriate way to do reduce these gaps might be to concentrate development on the traditional sector and reduce the rate at which incomes increase in the modern sector.

Women, Food and Nutrition

It is increasingly recognized that in Kenya women, most of whom work in the informal sector, provide the main economic support for themselves and their families. For many families, women's income from informal sector activities is indispensable for survival. Kumar (1977) reported that, in India, income from cash crops does not necessarily go towards improvement of family nutritional status but income from small gardens was positively related to nutritional status. This may be due to the fact that such incomes are normally handled by women. Kaiser and Dewey (1991) showed that when men control family incomes, family nutritional benefits are not normally realized due to differences in female-male spending patterns. Males tend to spend more of their incomes on non-food items. However, this situation is seldomly recognized by policy-makers, who continue to focus on the need of organized male workers and on ways to provide employment for men who are considered to be the main bread-winners in the household.

In regards to health care, women have multiple roles. Firstly, they have distinct and significant health needs related in part to their reproductive function during pregnancy and child-birth; secondly, they are the informal providers of health care in the family, and thirdly they form the majority of professional health workers in the community (Jansen, Horelli & Quinn, 1987). It is the women who are expected to be health educators; to teach sound health practices to future generations; to create a home environment that is conducive to health (from clean water to nutritious foods); to assume the major role in family planning; to ensure that the children are immunized and cared for during the crucial years and to take them to the formal health care services when necessary. Hardships imposed by poor nutrition, water shortages, inadequate food entitlements, and absence of effective social security systems all combine to undermine women's health and cause malnutrition.

In Kenya, many women combine their domestic responsibilities with agricultural labour, and also work in both formal and informal economic sectors. Women work hard, but their contributions can not be quantified in economic terms (Heasman, 1966). The time devoted to childbearing and social recognition play a considerable role in determining their nutritional status. Many studies relating women's work-load to child health indicate the effects of the former on women's own health (Oniang'o, 1986; UNICEF, 1984). Increasingly, evidence suggests that women adjust the number of meals or kinds of food provided for their family based on their work loads, (especially in agricultural labour), and based on the availability of fuel and water. A heavy work-load for women tends to produce a poorer diet, not only for their children and other members of their family, but also for the women themselves (Oniang'o, 1986). For example, cooking practices change. Quick-to-prepare meals, usually of nutritionally poor staples, are provided once a day or in bulk and vitamins are destroyed by food kept simmering in pots all day.

Intra-family distribution of food is also affected when women have no time to prepare special weaning foods for their children and to supervise the distribution of food. Furthermore, neglect of household hygiene may result in rampant infection, all with consequent negative effects upon nutrition. In spite of this, women's work becomes invisible because of cultural attitudes about appropriate roles for women. Thus, women are nutritionally vulnerable both because they have special nutritional needs and because they are not always recognized in their community (UNICEF, 1984).

In Sub-Saharan Africa, 43% of the households are headed by women (United Nations, 1989). Women become heads of the rural households due to male migration to the urban areas either as a result of rising rates of desertion or shrinking land sizes. Therefore, women's agricultural work loads have tended to increase their traditional work of child care, wood-gathering, water fetching, food processing and preparation. Furthermore, although untrained and frequently illiterate, they are forced to perform most of the unskilled manual labour that has been done in labour-intensive forms of agriculture and rural industries. The conditions of men and women in the rural areas and the urban shanties are abnormally poor, but the women's situation everywhere is sorrowful under the patriarchal structures that have been reinforced by the state, leaving women vulnerable to malnutrition.

Lack of knowledge

The two events during which poor feeding practices have an especially negative effect on the child's nutrition are pregnancy and weaning. The practice of restricting food intake during the third trimester of pregnancy in order to limit the size of the new-born appears to be relatively widespread. But the main period when undernutrition occurs in childhood is clearly between ages 6 and 24 months, and it is associated closely with poor weaning practices. Prolonged breast feeding is often accompanied by a late start in supplementary feeding and inadequate or contaminated supplementary foods. According to the child nutrition survey of 1982, almost one fifth of the children surveyed had not been started on supplements by the age of six months, about 60% received maize porridge as their sole supplement and 28% received no milk in their weaning foods (Central Bureau of Statistics, 1983). The reasons for inadequate supplements, either in terms of quality or quantity are linked to breast-feeding as a means of birth control and insufficient means to purchase the right foods and amounts.

Disease

Child morbidity is dominated by communicable diseases. The common diseases are acute respiratory infections, diarrhoeal infections, intestinal parasites and immunizable vector-borne diseases (Kenyan Government, 1988). Most child illnesses interact with nutrition and in the process reduce appetite and food intake during the course of illness. Conversely, undernutrition tends to weaken the child's resistance to disease. These interactions are especially marked with diarrhoea, which is a source of in-patient morbidity among children under the age of five. In a nation-wide survey of the under fives in 1987, the average incidences of diarrhoea in the preceding two week period was 13.6%, which corresponded to four episodes per child per year (Central Bureau of Statistics, 1989).

Studies of intestinal parasites suggest that the two most common parasites, hookworm and roundworm, cause severe anaemia and are prevalent in the Rift Valley (15%), Central and Western provinces (21-25%) and Coast province (55-70%) (Unicef, 1990). A study in 1977 on the effects of parasites on nutritional status of the population concluded that parasites retarded growth in children and that their treatment led to a significant growth spurt (Kenyan Government, 1988).

Among the immunizable diseases, measles is the leading cause of death in children. Scattered studies show that the proportion of deaths in the 1-4 year old associated with measles was 16% in Nyeri District and 26% in Siaya District (Kenyan Government, 1988).

For vector-borne diseases, malaria stands out as the most common. More than half of all children are normally infected with malaria at least once before the end of the third month of life. The disease is endemic in most districts below 1,600 m in altitude and epidemic both in areas over 1,600 m with high rainfall and in dry areas with exceptional rainfall.

In summary, a large proportion of the Kenyan population is malnourished because of inequalities in distribution of purchasing power, seasonal food shortages, lack of nutritional knowledge, and the effects of diseases on nutritional status.

Conclusion

Chronic undernutrition is still a prevalent problem in Kenya and it is believed to affect about 30% of the child population. Furthermore, the current incidence of undernutrition is increasing both in terms of percentages and absolute numbers because of those affected by poverty and stagnated agricultural growth rates. For example, in Coast Province, prevalence of malnutrition is as high as 40% among children. The major nutritional deficiency diseases are protein-energy-malnutrition (PEM), anaemia, vitamin A deficiency and iodine deficiency. The causes of undernutrition are multiple, but lack of nutritional knowledge, poverty and disease seem to be some of the contributing factors. The most vulnerable population for undernutrition are infants, the preschool and school-age children, pregnant and lactating mothers, the urban poor and pastoralists.

Kenya faces a critical economic and social crisis. Mass poverty has increased and so has unemployment and underemployment. The causes of undernutrition are very much linked to those of economic inequality, poverty and socio-economic dependency. Social frustrations were intensified when Kenya adopted stringent financial stabilization and structural adjustment measures to restore some economic balances. These measures however, have served to increase the scope of poverty among the marginalized people, even though the World Bank and IMF had predicted the contrary. Both hunger and rapid population growth reflect the failure of the political and economic systems of Kenya which do not serve the needs of the majority of the people. Hunger and population growth are both symptoms of the failed political and economic systems which were inherited from the colonial period. The best solution to reduce population is for the government to give people effective land reforms and more incomes; that is redistribution of land so that people can have access to land for food production. The neglect of the human dimension in the measures taken to date has caused an intolerable deterioration in the human capital of Kenya.

The increasingly high number of landless peasants, the concentration of landholding and the commercialization of agriculture based on wage labour are all contributing factors to the problem of malnutrition. The main cause of malnutrition is low income resulting from inadequate household production, biases in input and/or output prices or low wages. The causes of inadequate household production vary. In the case of smallholders in low-potential areas, low rainfall and the poor soil that they are reduced to farm, are largely to blame. Smallholders in high and medium potential areas suffer from their crowding into holdings that are too small. The landless, squeezed out altogether, suffer from the low wages that are obtainable in the rural areas. Pastoralists, confined by encroaching agriculture, wildlife and environmental destruction suffer not only from increasing inadequacy of their income, but also from its unreliability. For the urban poor, the problem is to get one of the few jobs that pays an adequate wage, or if confined to the informal sector, to find space in a market dominated by large firms. Biases in input and output prices affect negatively the protected sectors as a whole, including agriculture.

This review is frightening for Kenya in that the situation is getting worse. The solutions prescribed actually foster inequality and poverty among Kenyan people. While short-term measures such as food aid would be necessary to relieve the immediate food, health care, and income hardships of many poor families and communities, the basic problems are structural and embedded in policy mis-orientations. Therefore, they require fundamental long-term solutions, such as effective land reforms, and rural industries that would transform the socio-political structures as well as the economic ones. Since the problems outlined are interrelated, their solutions must be found in an integrated framework of social and economic planning, in which the needs of the majority of the people, including women and the poor, would be central. It would require a development plan which places all people at the centre of development, as contributors and beneficiaries, but also ensures their equitable participation and social justice in an increasingly democratic process of governance. There is a need for social entitlement that is deeply embedded in the politics of democratization, in this case, the right not to be hungry and not to live with the emergency of civil society in Kenya. Furthermore, there is a need for the provision and recognition of legal status of women as major producers of food and overall, a call for grassroots participation in all decision-making processes. In Kenya, women have legal status but the problem is enforcement of this legal law and the conflict between legal and traditional systems. These long-term solutions would also mean a fundamental change towards internally oriented development policies and strategies, so that internal, rather than external, demands, resources and capacities would be the driving force for development.

CHAPTER THREE

LITERATURE REVIEW, NUTRITION EDUCATION

Problems and issues involving food and nutrition are major considerations for national and international agendas (Yang, 1993). Malnutrition and over-nutrition throughout the world are leading to imbalances both in availability of products and knowledge about nutrition. Several approaches have been used to control malnutrition in developing countries. All interventions are aimed at those population groups that are most nutritionally vulnerable, such as infants, preschool children, pregnant and lactating mothers, and, most recently, the aged (Underwood, 1990). Some of the intervention programs that have been used to combat malnutrition in these countries are: nutrition education, subsidy food supplementary programs, food fortification, and food production (Austin, 1980). Strategies to prevent repeated infections, such as improved health care facilities, living standards, and economic conditions, have also been used to reduce the incidence of malnutrition and infection (UNICEF, 1992).

Nutrition education is an essential process for coping with these problems and issues. Nutrition education may be defined as the teaching of validated, correct nutrition knowledge in ways that promote the development and maintenance of positive attitudes toward, and actual behaviour habits of, eating nutritious food that contributes to the maintenance of personal health, well-being, and productivity (Journal of Nutrition Education, Editor, 1985).

Structure of Nutrition Education Programs

Goals of Nutrition Education

Generally, the purpose of nutrition education is to create informed consumers who value good nutrition and consume nutritious foods throughout their lives. Gussow and Contento (1984) distinguish between long-term and short-term goals of nutrition education. The four short-term goals are to enable the nutrition consumer to:

1. Master knowledge contained in nutrition units being taught, including becoming a literate consumer who knows what foods provide essential nutrients and are culturally acceptable;

2. Build conceptual frameworks for nutrition (principles, generalizations, and applications of principles) that one spends the rest of life completing and revising;

3. Develop positive attitudes toward good nutritional habits including developing motivation to use nutritional knowledge to promote health and well-being, building interest in and commitment to continually acquiring knowledge about good nutrition and health, and developing a predisposition to respond to nutritious foods in a favourable manner; and

4. Consume nutritious foods, including using nutritional knowledge to make wise food choices.

Long-term nutrition education goals are to enable the food consumer to:

1. Use conceptual frameworks for nutrition to adjust to changing food supplies and to discriminate amongst different kinds of dietary advice;

2. Seek out and be receptive to further knowledge about nutrition; and

3. Intelligently select and consume nutritious foods throughout life in order to maintain health, well-being, and productivity.

Problems with Implementation of Nutrition Curricula;

According to Whitehead (1973), Gran (1986), and my own personal observations, there are a number of problems in the implementation of nutrition education curricula. One of the problems is the lack of teacher training in nutrition content and educational methodology. In many developing countries, due to shortages of personnel and training facilities, personnel engaged in teaching nutrition are normally trained in other areas such as nursing or community health and, therefore, have a limited background in nutrition. Further, the focus of education is on nutritional knowledge rather than attitudes development and behaviour. For example, in Kenya at the school level, nutrition education emphasizes the acquiring of nutritional knowledge just to pass the examination but that knowledge has little home application.

The curriculum is teacher-based and therefore does not provide students with the opportunity of learning in ways which would influence their nutrition behaviour. For example, curriculum materials focus on teacher-dominated lessons that do not provide for active participation of students. The assumption is that the teacher is the expert and that the students know nothing. One way of describing the current situation of nutrition education is that of a dialogue of elites. Elites define the problems, select the strategies, and choose the implementing institutions. This is true in most cases because when the people who are in power are asked to devise a curriculum for a particular student body, they rarely consult the students concerned, thereby risking the creation of a program irrelevant to the students' needs. One of many results of this elite dialogue training is that curricula are too sophisticated for field workers, making it difficult for them to properly implement the programs.

Strategies for Change in Nutrition Education

Whitehead (1973) suggests the following instructional methods for successful implementation of nutrition education: create learning situations in which people recognize their own nutrition problems and are then led step-by-step through the active process of problem-solving so that they learn to solve their own nutritional problems; emphasize the development of concepts of nutrition through guiding participants to see relationships between nutrition facts and their own experiences; actively involve participants in the problem-solving and decision-making processes before they are told what and how much to eat or shown how to prepare nutritionally adequate food; use small group discussions to lead to group decisions that commit all members to better food habits and, last but not least, use coordinated, community approaches in which people within the home, community, and school all participate in planning, conducting and evaluating nutrition education programs.

But not only instructional improvement is needed; nutritionists must increase their influence on decision-makers, institutions, and states that are empowered to reduce or prevent malnutrition. To do this, the profession must increase its awareness of the economic and political dynamics that are responsible for hunger, and the power game involved in the allocation (acquisition, processing and consumption) of food. In a survey of International Union of Nutrition Sciences members regarding the scope of nutrition education in developing countries, many felt that its scope should be broadened. Ninety percent of the respondents surveyed said that the social cultural context should be part of nutrition education (Mosio & Eide, 1985). Furthermore, Tarasuk and Maclean (1990), in a study of food problems of low-income single mothers in Canada, found that the women's food problems were firmly rooted in the economic, social, and cultural realities of their impoverishment. They, therefore, advocate structural changes that would improve the economic situation of those living in poverty, changes that might help eliminate the problem of malnutrition in the long-run. To shape and execute a more aggressive role for nutrition education would require a radical reorientation of the scope and perspectives of many programs that address the etiology and prevention of nutritional problems (Mosio & Eide, 1985).

To have a real impact on hunger and poverty, nutrition education must address the underlying socio-economic and political causes of these problems (Mosio & Eide, 1985; Scheider, 1992). In order to address such issues, nutrition educators must first become better educated about the different factors involved in hunger and poverty. For example, learning more about the socio-economics and politics of food production would help nutrition educators better understand the bigger picture (Csete, 1992). In turn, nutrition educators could use this information in the community to demonstrate to others the causes of poverty and advocate for legislation to address these problems (Scheider, 1992).

Nutrition education, as it relates to hunger and malnutrition, involves both changing the environments that lead to hunger and helping people make better choices from the available resources (Lewis, 1992). Many nutritionists in the third world should realize that without adequate resources nutrition education alone is not very helpful (Dodds, Parker, & Haines, 1992). In this context, changing the environment that leads to hunger includes educating policy-makers about the need for increased food resources and the need for nutrition education that is truly relevant and useful to low income people (Dodds et al, 1992).

Finally, as is implied in the discussion of the Aoki Action-Reflection curriculum orientation and the Nutrition for All framework presented at the end of this chapter, it is extremely important to involve low income people in the development, implementation and management of nutrition education programs in their communities.

Nutrition Education in Developing Countries

Nutrition education programs have been used for decades in developing countries. The goal of such programs has been to improve personal nutritional status and general well-being of individuals and families. The programs normally involve food preparations, child feeding practices, family planning, improved sanitation, identification and prevention of infectious diseases, and improved food production (Austin, 1980). The basis of nutrition education is to encourage the consumption of a locally available nutritious diet and to stimulate effective demands for appropriate foods.

Nutrition education programs in developing countries have often had limited success (Pryer, 1988). Most were based on the hypothesis that improved nutritional status would be achieved if people made better use of available resources. Behavioural change was expected from poor people who had little influence on the political and economic processes (such as unemployment, illiteracy and poverty) shaping their lives (Peters, 1984). The value of nutrition education in the context of these countries has long been debated.

Opponents of nutrition education argue that deleterious belief patterns rarely are the primary constraints to improved nutritional status and that where poor families have inadequate purchasing power, nutrition education is irrelevant. On the other hand, advocates of nutrition education, argue that even in such cases, families with better knowledge of, for example, the importance of breast-feeding, timely supplementary feeding, and management of weaning and diarrhoea can compensate in part for scarce resources (Levinson, 1982). Where erroneous beliefs or traditions lead to poor use of nutrient sources, nutrition education clearly becomes appropriate. For example, in a study in India on child health and nutrition in two caste systems, results show that change of beliefs through nutrition education improved the well-being of children (Levinson, 1982). However, acquiring nutritional knowledge alone will not in itself lead to improved dietary practices. Increased purchasing power and improving attitudes of the people toward nutrition will enable a person to use that knowledge to provide for good nutrition (Mothibe, 1990).

A 1982 study assessed the value of a nutrition education project in Morocco. The project involved the establishment of a nutrition institute for training supervisors, the development of the curriculum, and the operation of monthly classes at the centre on nutrition, health, hygiene, sanitation and food preparation, and provision of food ration. It served 150,000 mothers and 300,000 children and was considered successful. The program thus included both nutrition education and child-feeding and it probably represents the most substantial evidence to date to support the complementarity of these two activities in programs developed to reduce malnutrition. (Levinson, 1982).

The results of the Levinson project as a whole (food and education) produced in a 69% reduction in moderate and severe protein-energy-malnutrition (PEM). To determine the effects of nutrition education alone in this program, children's weights were compared between those who were in the program before the nutrition component was introduced and those who were in after this component was introduced. The results suggest that nutrition education independently reduced moderate and severe PEM by half (Levinson, 1982). These data imply that nutrition education, creatively and effectively combined with child-feeding programs, has the capacity to add considerably to program impact. This, in turn, suggests a complementarity and synergism between food provision and education that, at least under some conditions, will exceed the potential impact of each individually (Levinson, 1982).

Peters (1984) states that in order for nutrition education to be successful nutrition educators must understand community development in general. Then they can work with communities to change structures and systems which prevent the achievement of nutritional well-being. Nutrition educators need to expand their horizons beyond the traditional content and thrust in both academic and community programs. She advocates the inclusion of development education as an integral part of nutrition and health education.

Furthermore, the success of nutrition programs in developing countries will continue to be limited unless there are broader and more effective development education programs in affluent countries. This is because, unless the scope of nutrition education is wide in the affluent countries, the nutrition programs in developing countries will continue to be limited in scope and thus not likely to address appropriately the issue of malnutrition. Therefore, with more food, nutrition, and health content in development education programs and more development education in food, nutrition, and health education programs, the root causes of hunger and malnutrition can be tackled with optimism for the future and a greater possibility of success (Peters, 1984). Nevertheless, just teaching women how best to apply their resources may contribute to improvements in nutritional levels and, in some small measure, to economic and social development.

Nutrition Education Programs in Kenya

In Kenya, the importance of food and nutrition has been recognized by the Government since the *First Development Plan of Kenya 1974-1978* and it was given more prominence in subsequent plans. Furthermore, provision of proper nutrition is an essential component of the *Development Plan of 1989-1993* (Kenyan Government, 1988). The Government has given high priority to understanding the factors causing nutritional problems and to developing measures to alleviate hunger, malnutrition, and poverty among vulnerable groups. An important step taken by the Kenyan Government has been the establishment of a Food and Nutrition Planning Unit and an Inter-Ministerial Committee for co-ordinating all nutrition activities and research in the country.

Nutritional intervention programs aim at improving diets and are usually focused on the child and mother. In Kenya, as in many African countries, different forms of intervention programs exist. Two forms of intervention, namely curative and preventive, are common. A primary distinction between these two programs is that the curative concentrates on children who are already malnourished, while the preventive tends to focus on mothers of young children or the entire population (Hoorweg & Niemeyer, 1980).

Intervention programs offered in Kenya include nutrition education, feeding, fortification, and supplementary programs. The aim of nutrition education programs is to provide information, to influence food preferences, and to foster certain food habits with a view to improving the diet (UNICEF, 1990). For example, nutrition education programs have been used to improve individual food choices, attitudes, and behaviour. Feeding programs provide foods which are normally eaten on the site. They are a component of supplementary programs. Fortification programs add the nutrients that are lacking to foods that are commonly used and locally available in the area of concern. Fortification and supplementation programs have been used mainly to alleviate acute malnutrition on a short-term basis.

In Kenya, most of the nutrition education programs are coordinated through the Ministries of Health, Agriculture, Culture and Social Services, Education and Planning, and National Development. Other bodies involved include non-governmental organizations such as the Gospel Church, Catholic Church, the Christian Council of Kenya, and international bodies such as Unicef and the World Health Organization. Following are some of the specific nutrition education programs, but some of these programs described as nutrition education programs are actually combined programs, utilizing feeding both to support nutrition and to contribute to the nutrition education of mothers and children.

a) The Family Life Training Program of the Ministry of Culture and Social Services

The overall objectives of the Family Life Training Program are to provide mothers with the information and training needed to enable them to adopt practices that improve the health and well-being of their families, especially children, and to treat malnourished children by providing a high protein diet (Kenyan Government, 1988). In order to achieve the above objectives, the centres admit mothers with malnourished children for a period of three weeks. During this period, children are treated and fed while mothers are trained in nutrition. The mothers and their children live in cottages at the centre, where mothers prepare their own food and feed their children under the supervision of qualified centre staff. During this period, the mothers attend training on nutrition, child care, health and hygiene, family planning, home management, and agriculture. While at the centres, the malnourished children are monitored, and serious cases are referred to a hospital for treatment.

One other aspect of the program is the outreach program that is aimed at preventing malnutrition by training mothers in their own communities. The outreach programs aim to assist individual families in their efforts to improve family welfare, preventing malnutrition and poor health, and thus reach families with information on all aspects of family living (Kenyan Government, 1988).

The follow-up exercise is also an important aspect of this program. Through such exercises, mothers or ex-trainees are visited in their home and the children's progress is monitored. A study on such a program in Uganda reported that trainees increased knowledge about nutrition as a result of participation in these programs (Hoorweg, 1979). In addition, such programs led to positive changes in patterns of preferences for meals for young children, with a growing tendency to select meals with a high protein content. However, an examination of the existing family life programs in Kenya show that the follow-up system has not been systematic, and several mothers have been known to return to the centre repeatedly with malnourished children (Oniang'o, 1981).

b) The Nutrition Field Worker Program of the Ministry of Health

In the Nutrition Field Worker Program, nutrition field workers who are already nurses receive a six month nutrition course at Karen College, Nairobi. These graduates are sent out to various hospitals and clinics throughout the country where they conduct lessons and demonstrations in nutrition. Their specific responsibilities are to: a) identify the high nutrition risk groups; b) carry out nutrition/health education; and c) monitor progress of malnourished groups through follow-ups (Karuiki, 1983). The Ministry also develops teaching material for use in the field.

A survey of the nutrition field workers has shown ineffectiveness concerning the deployment of personnel. This arose due to the lack of backing from the Ministry of Health's head office and due to the lack of supervision in field programs. In addition, the activities of the field workers are diffuse. Most of them function mainly as nurses in the mother-child health clinics, while those who insist on performing their specific nutrition roles are isolated (Hoorweg & Niemeyer, 1980). Reports also indicate that while these field workers are carrying out their activities their contact with mothers is always limited, and the task of teaching mothers is often left undone (Karuiki, 1983).[1]

c) The Food and Nutrition Studies Program (FNSP);

The Food and Nutrition program is operated by the Ministry of Planning and National Development. Its responsibility is integrating food and nutrition considerations into overall development policy and into planned or on-going programs. It also has an important role in problem identification, information gathering, and applied research (Kenyan Government, 1988). The objective of this program is to analyze current developments concerning food and nutrition in Kenya, notably regarding the interface between socio-economics, agriculture, and nutrition. Through it, important insights have been gained in policy areas of nutrition in rural development, seasonal and regional problems, and agricultural policy.

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[1] In a study of nutrition education programs, it was reported that the problems of noisy crowded rooms, lack of the learners's interest and lack of the learner's understanding of the material taught, hindered the teaching of nutrition programs and its effectiveness. The methods used to teach mothers were not appropriate to the academic levels of mothers (Karuiki, 1983). This could have contributed to the ineffectiveness of these programs.

d) The Ministry of Agriculture's Nutrition Activities

The goal of the Ministry of Agriculture is to ensure availability of adequate food for the nation. Through its nutritional activities, the Ministry ensures that food produced is stored and used effectively in order to promote good health. The Ministry's nutrition activities, including nutrition education activities, are the responsibilities of the Home Economics Extension Program, whose ultimate goal is to improve the quality of life of the farming communities. The specific goals of the program are to: a) enhance food security at the household level; b) promote food preparation methods that ensures optimum retention of nutrients and c) create awareness of dietary management of vulnerable individuals within the community (Kenyan Government, 1981).

The outreach of the nutrition program is mainly through the established extension services of the Ministry. The nutrition messages form part of the extension packages delivered to the farming communities. The nutrition messages are normally preventive in nature and aim at reducing incidence of malnutrition. It has been reported that nutrition messages are not conveyed effectively when integrated with extension messages and would be better focused on women's groups (Central Bureau of Statistics, 1989).

e) Home Economics Programs of the Ministry of Education

Nutrition education in schools is taught through home economics programs. At the primary level, the subject is compulsory for all primary school children. At the secondary level, it is optional and is offered in most girl's schools. At the University level, it is offered at both bachelor's and graduate levels. Emphasis at all levels is on passing examinations and has little application in the home.

f) National Christian Council of Kenya

The National Christian Council of Kenya provides nutrition education through its village polytechnic, rural training centres and its extension work in semi-arid areas of Kenya. In addition to the education, it also distributes low cost weaning foods to mothers with malnourished children.

Summary of Nutrition Education Programs in Kenya

In Kenya, nutrition education is widespread and is the major approach used by many organizations in reducing the incidence of malnutrition in the country. Nutrition education is therefore provided by nutrition field workers, extension workers, and home economists at various levels. In most cases, mass media are used to disseminate nutritional messages. Advocates of nutrition education in Kenya emphasize the teaching of nutrition education in homes because it is more relevant and practical as compared to typical nutrition education approaches like group teaching, which seems to be losing ground (Oniang'o, 1981). However, individualistic programs have been shown to be costly.

Although there are various efforts to alleviate malnutrition in Kenya, there has been little coordination of services offered by various agencies. This has resulted in the duplication of the already needed limited resources. Therefore it has become difficult to determine what percentage of the target population is benefiting from these programs. It is hoped that future nutrition education interventional programs will address some of these limitations.

Possible New Directions for Nutrition Education in Kenya

Rationale for Alternative Nutrition Education Models;

In recent years, the need for theoretical models or theory-building research in nutrition education has received great attention (Brun & Rhoads, 1983). At a conference on nutrition education research in the late 1970s a strong sentiment was expressed for investing more time and effort in theory-building research. Panellists felt that more exploratory descriptive research would lead to richer results than the traditional quantitative methods (Sims & Light, 1980). Johnson and Johnson (1985) recommended that future nutrition education efforts focus on theory-building, beginning with the development of a generic theory regarding the design and implementation of nutrition education programs.

The use of a conceptual framework to guide formulation of the research problem and organization of the research efforts is an important strategy in strengthening nutrition education. These frameworks can guide researchers in identifying variables and their inter-relationships within a broader perspective of nutrition education. Furthermore, by identifying a framework to define variables and their interactions, a common frame of reference can be established among researchers (Balakrishnan, Firebaugh & Stafford, 1988).

Present and New Practices in Nutrition Education

Nutrition education is more complex than education in other subject areas. This complexity is partly the result of the need to create informed consumers who value good nutrition and consume nutritious foods throughout their lives. In her comprehensive review of nutrition education efforts with adults and children from 1900-1970, Whitehead (1973) reports that most nutrition education emphasized disseminating nutrition information. She concludes that the suggested learning activities were strongly teacher-dominated, with active student participation in only a little over half of the programs. Furthermore, the objectives given for the teaching units were primarily in the cognitive domain, with most of the objectives at the lower levels of the cognitive taxonomy, that is, requiring only knowledge and comprehension. Absent were objectives focusing on the ability to analyze, synthesize, and evaluate good and bad nutrition information and to apply this information. The necessary skills of making wise food choices and discriminating among diverse bits of dietary advice were seldom taught and evaluated.

Current theory and research suggest that, to successfully achieve the long and short-term goals of nutrition education, curriculum materials and instructional methods need to reflect the social context and interpersonal interaction factors. This research indicates that materials and methods that reflect such factors are important in influencing enduring knowledge acquisition, positive attitudes development, and nutritious behavioural habits (Whitehead, 1973).

With this kind of curriculum orientation, the objective of nutrition education is not simply improved nutrition but also empowerment. In an empowering nutrition education model or approach, the concern is with social and political possibilities; Rody (1988) believes that this approach to empowerment could be effectively used with low income populations. Such education raises questions, and the analysis of these questions provides the basis for finding ways to expand and improve the range of social and practical possibilities (Kent, 1988). Empowering nutrition education encompasses political, social, and economic factors which affect nutrition and it encourages local people to participate in the interpretation and analysis of their own situations. With these educational processes, local people are able to reflect together on issues such as malnutrition.

Through dialogue, both teacher and students come to an understanding, for example, of how government actions contribute to malnutrition. Drawing on Freire (1970), one could assert that nutrition literacy means more than knowing technical aspects of nutrition; the teaching of nutrition should include the examination of the world which generates malnutrition. For example, following Drummond (1977), people might recognize that the poor health of most people in third world countries is caused by the lack of access to resources such as land, credit, income, legal services and sanitation rather than the lack of knowledge. She says:

> I believe that in the ideal situation, nutrition education should be a part of a global effort for liberation from hunger, disease and inhuman conditions; a joint effort of people and technical staff for achieving first and foremost a humanizing situation where dependence is destroyed. This implies conditions in which people are acting as subject and not passively receiving information. It is more than just participation of the people because it involves a whole basic philosophy and motivation on the side of both the teacher and students. Nutrition education then is part of

> "conscientization" and the awakening of critical awareness among people who have many deprivations, including food and nutrient deprivation. (Drummond, 1977: 13)

Drawing on ideas from a critically reflective orientation to curriculum (Aoki, 1981), participatory nutrition education would involve a specific view of people, including the view that people have the potential to act upon their world to change it, and a specific orientation to 'ways of knowing'. Although there are a number of elements to these ways of knowing (see Appendix 5), one basic element is that knowing involves self-understanding which leads one to action 'on the world'. That is, knowledge is critical in that it is a means of understanding not only oneself but the social and political reality in which the individual finds herself, and therefore leads to action on that reality.

Thus, when one is designing a curriculum, the following questions need to be addressed: 1) What knowledge is to count ? 2) Who will decide which knowledge is acceptable ? and 3) Why do we educate students in nutrition ? For the dialogue which follows the raising of these questions, the intent is to seek to uncover the assumptions drawn upon in answering them. Knowledge is recognized as being socially selected and organized for a specific audience. The teacher is perceived as one who is himself or herself taught in a dialogue with the students, who while being taught also teach. Teachers and students become jointly responsible for a process in which they all grow and learn (Freire, 1970). The teacher is a facilitator who constantly creates opportunities for discussions and poses questions which help students figure out their own problems and develop their understandings of their own situation, in their own terms (Freire, 1970). Students, as they are increasingly confronted by problems relating to themselves in their world, feel challenged and obliged to respond to that challenge. Their response to the challenge evokes new challenges, followed by new understandings and the gradual commitment of the students (Freire, 1970).

Nutrition education programs that are based on social and individual reflection should help participants develop a sense of community and the power to advocate on their own behalf on other issues and problems that affect low income people and cause hunger and malnutrition (Scheider, 1992; Kent, 1988). I believe, if incorporated into nutrition education programs, this kind of curriculum approach will help reduce the incidence of malnutrition among poor people. However, a second and related recent model of health education must also be considered which is the Achieving Health for All framework used in Canada and other Western nations.

The foundation for this approach is the World Health Organization statement which recognizes that people in communities have knowledge and wisdom which they can use to address their own problems:

> With this recognition of the fact that there is a conventional wisdom in every community, and that people are able to think and act constructively in identifying and solving their own problems, the emphasis on health education is shifting from 'intervention' to 'community involvement. (WHO, 1983)

The Health for All framework is based on community involvement and it recognizes the importance of the social, economic, and environmental determinants of health and nutrition. However, "the recognition that health is determined by factors often lying beyond the individual control and sometimes originating completely outside the health care sector, has placed health promotion firmly in the domain of Canadian public policy" (Epp, 1986 but modified by Stachenko, 1992, p.5, to apply to heart health). Such a community involvement framework views nutrition and malnutrition as the product of wider environmental factors and aims to influence policies which shape the conditions of people's lives. The view of nutrition promotion within it arose, in part, from a belief that, when constrained by factors such as poor health, poverty, and low self-esteem, people may not have command of resources nor the necessary power to alter the conditions that affect their health, nor believe themselves able to take control.

As a result of this perceived lack of power, a nutrition program that involves the community attempts to empower communities to assume control of their own health (Rifkin, 1986). There are three principles central to the notion of empowerment: first, nutrition promotion must address problems that people themselves define as important; second, nutrition promotion involves effective participation of the public, alongside experts, in problem-solving and decision-making; and third, nutrition promotion works effectively when it is in harmony with a strong public policy.

The Achieving Health for All framework identifies "enhancing prevention", "reducing inequities" and "enhancing peoples's capacity to cope" as three major health challenges. In countries where this framework has been used, it has helped unify the efforts of those working in different parts of the health system (Stachenko, 1992). These recognitions and outcomes would likely be as beneficial to Kenya as they have been to the economically wealthier countries of the North which have introduced this program framework.

Thus, the Health for All framework adds to the approach of Paulo Freire and Aoki the need for public policy to support the mobilization and involvement of people in communities in nutrition education. This new approach could create conflict in a country like Kenya, where it might be viewed as revolutionary. However, if carefully executed, starting off with small scale programs that are less radical, this approach could work effectively there. For example, in the Dominican Republic, a women's nutrition training course which was structured along the lines of Paulo

Freire's philosophy, examined nutrition not only in technical terms, but also examined the social, political, and economic context of the women's lives. The women assessed nutritional problems in their area and worked out ways of dealing with these problems (Hills, 1984).

In Kenya, as discussed in previous chapters, malnutrition is the major cause of mortality and morbidity among children. Its costs in personal, social, and economic terms are immense. Many of the major determinants of malnutrition are known diseases, dietary deficiencies, poverty, parasitic infestation, poor sanitation, and lack of nutrition education. Because of its multi-factorial nature, malnutrition has to be tackled contextually at many different levels. Hence, nutrition education becomes an entry point and a focus for integrated action—action that goes beyond the vertical, circumscribed programs based on a behavioural single risk-factor model to a broad-based, systematic approach in which every player values, builds on, and potentiates the efforts of every other (Rifkin, 1986). As with heart health policy (Stachenko, 1992), nutrition education policy needs to be aimed at fostering a culture of consensus and shared values through coalition building and collaboration .

Drawing further on Stachenko (1992) but modifying her ideas to apply them to nutrition, it can be argued that achieving health for all requires action not only at the community level but also at the political level to tackle broad social and economic issues, including, for example, those of education and unemployment. The major advantages of this framework is that one can accommodate "the shift from a professional-focused to a client-focused system, from a process/program orientation to a results orientation, and from an emphasis on structures, regulations, and dollar allocations to one on flexibility, less formal modes of communication, and resource leverage" (Stachenko, 1992, p. 7).

Compared to more traditional approaches, this new management paradigm has the potential to achieve far better results. Partners working in an atmosphere of collaboration are more likely to feel a genuine sense of empowerment and, by extension, be willing to share responsibility for achieving results (Stachenko, 1992). For example, an innovative collaborative project in Humphrey County, Mississippi, with low income groups, shows that low income residents have a strong desire and capacity to take charge of their lives and their health and will volunteer their time and resources to help others (Hinton, Rausa, Lingafelter, & Lingafelter, 1992). Perhaps the most important lesson learned in the Humphrey project is that public health nutrition issues do not exist in isolation from other health or social issues.

Nutrition issues intertwine with poverty, hunger, education, economic, and social problems in ways that frustrate single-factor solutions. Therefore, key to the resolution of chronic poor nutrition can be found in the development of new partnerships with the people themselves, partners who are dedicated to the vitality and well-being of communities. It is, however, important that policy makers understand that local initiatives to deal with the problem of poor health, poverty, and nutrition have the best chance of producing lasting solutions (Hinton et al, 1992). Citizen collaboration with professionals through genuine partnerships can in turn open up possibilities for community participation in a whole range of issues. The issue of malnutrition can thus be said to provide an entry point for a community's broader sustained involvement in nutrition education and general health. It is hoped that this new management model will ultimately provide Kenya with a model to address the increasingly complex nutritional issues Kenya is currently facing.

The field of nutrition promotion is still very new, and research in this field is in its infancy. However, health promotion now provides quality of life programs, social change strategies, and public education, all key strategies for nutrition education management. Linking health and nutrition has been the basis of success for health promotion in the past and it is surely the way of the future.

Summary of the new Nutrition Education Approaches

The Achieving Health For All (Epp, 1986) and the Aoki (1981) Critical Reflection curriculum orientation are two approaches that seem to have the potential to deal with the above problems. These two approaches emphasize greater reliance on community participation and social mobilization in the design, delivery, and monitoring of programs and have potential for three reasons:

1. A greater internalization of the benefits of the program by the poor;
2. The adoption of less-intensive approaches lead to substantial cost containment and improvement in overall efficiency. For example, the involvement of a community nutrition worker will in the long run save on personnel cost; and
3. Community participation facilitates the mobilization of additional resources such as labour and locally available materials which have low opportunity costs but intrinsic productive value.

At present, nutrition information in developing countries is generally communicated in health clinics to parents of malnourished children (Jellife & Jellife, 1984). Furthermore, most nutrition education programs concentrate on rehabilitation rather than prevention. Such information programs are directed by the Ministries of Health, Education, and Social Welfare, non-governmental organizations, or by the Home Economics Division of the Ministries of Agriculture.

This "malady-remedy" approach to improving nutritional status is unidirectional and does not involve participants in decision-making. Furthermore, poor people have had little representation and input into the many efforts intended to help them. They suffer the effects of the decisions made by other people who have more power and different priorities. In most cases, well-intentioned people act on their own perceptions and expectations of what would help the poor (Kent, 1988). In addition, even though nutrition educators know that poverty is a root cause of malnutrition in the developing countries, somehow that knowledge rarely informs their teaching. In practice, they focus on coping behaviour, showing people how to adapt to their deprivation as if it were immutable (Kent, 1988). Many third world poor people for whom nutrition education is intended are constrained by economic and social forces that are out of the control of the individual or local group (Mosio & Eide, 1985).

The next chapter provides background on the area in Kenya in which this study took place, and description of the methodology used. It will be followed by case study data on nutrition education processes and outcomes from the selected study in Kenya, and a final chapter drawing conclusions and presenting a framework for change in Kenyan nutrition education.

CHAPTER FOUR

LOCALE OF THE STUDY AND METHODOLOGY

The study was conducted in a peri-urban low income area in Nairobi. It is an economically deprived area and, therefore, more vulnerable to malnutrition. This area was selected from six peri-urban low-income areas with a nutrition education intervention program, because of the nature and scope of the program offered and the severity of malnutrition in the area.

The Nutrition Education Centre is located 15 kilometres east of Nairobi city centre. Most of its residents are casual labourers in the industrial areas of Nairobi. Others are engaged in small business or are unemployed. The living conditions of the people are generally poor and overcrowded and the general food consumption patterns of the people are poor. This nutritional pattern is usually attributed to nutritional ignorance and poverty. There is a high prevalence of morbidity from malaria, diarrhoea, and other infectious and deficiency diseases. In summary, this area was selected for the study because it had a nutrition education program and because it had a vulnerable group in terms of nutritional risk.

Most nutritional intervention programs in Kenya are based on rural experiences, and therefore, their effects with an urban population might be completely different than expected. Furthermore, no study has been conducted to obtain participants' views of a nutrition education intervention program in Kenya. The researcher's concern was to hear the mothers' voices on whether a current nutrition intervention program was addressing the problem of malnutrition and whether other factors influence feeding of their families. A peri-urban, low-income group was chosen for the study because they are a nutritionally vulnerable group due to their economic circumstances.

Because of the social, educational, and economic problems faced by women, the lack and/or short nature of training given to implementers of these programs, and the financial and physical facility limitations of these programs, it is important to look more closely at the teaching/learning process of women who attend them, the factors that influence women's understanding of nutrition, and the problems faced by the women. From this, it should be possible to generate recommendations for future effective implementation of such programs. The purpose of the present study, as described in the introduction, was:

1. To assemble relevant information on the nature of nutrition education received by low-income mothers in peri-urban Kenya;
2. To investigate how nutrition education is being used by these mothers in feeding their families;
3. To investigate the perception women have of nutrition education in Kenya in relation to the larger social, economic, and political context of adequate nutrition; and
4. To develop a conceptual framework for improving nutrition education for the low-income urban population in Kenya.

To facilitate the study, the following questions guided the study:

1. What is the nature of nutrition education received by low-income women in peri-urban Kenya?
2. How adequate is this nutrition information for these mothers in terms of the conceptual framework developed ?
3. Is that information/knowledge and the educational process used to transmit it sufficiently adequate to change the nutritional status of women and their families?
4. To what extent do these mothers understand and use this nutrition information in feeding their families?
5. What are the socio-economic factors influencing the mothers' understanding, interpretation, and use of nutrition education?

Locale of the Study

The Nutrition Education Program is located in a community of 70,000 people, covering an area of 5 square kilometres. It is located 15 kilometres from the city of Nairobi. This program is a non-governmental program and is run by the Gospel Church. It collaborates with the Kenyan government, other non-governmental organizations, and international organizations. The government is mainly involved in organizing community meetings, especially in making contacts with key people such as the area chiefs, but the program also liaises with the Ministry of Health in terms of the syllabus. The non-governmental organizations are involved in the planning stage in order to avoid duplication of services offered within the same community. The international organizations, namely Unicef, World Vision, World Health Organization, and World Conference of Churches, are mainly involved in the funding aspects. In fact, this program relies heavily on international donors (especially the World Conference of Churches) for all its financial support. The planning stage of this program involved the community, through community meetings, and other government officials plus other organizations engaged in similar work.

The Nutrition Centre operated by this program focuses on a rehabilitative program and also offers nutrition education for the mothers. The major objectives of the centre are to: 1) restore the health of malnourished children and 2) educate the community on nutrition and general hygiene.

The centre has several departments: 1) Social Work, 2) Day Nursery, 3) Health Clinic, and 4) the Rehabilitation and Nutrition Education Program. The nutrition program operates mainly through referrals. Mothers with malnourished children are referred to the centre from the Health Clinic by nurses. The social workers, as a result of home visits, also refer mothers with malnourished children to the centre. Once at the centre, these mothers are exposed to nutrition education and at the same time their children are fed a breakfast meal consisting of milk or porridge made of groundnuts and maize flour and a lunch consisting of a balanced low cost meal.

After the mothers have been referred to the nutrition centre because of the nutritional status of a child, they are required to report to the centre with that child and all other children below age five for five days a week from 9.00 am-1.00 pm over a period of three months or until their children get well.

Curriculum

The Nutrition Education Program focuses on a number of health topics: immunizations, family planning, care during pregnancy, birth, accidents in the home and first aid, prevention of alcohol and drug abuse, general hygiene, nutrition, infections, and worms. The researcher planned to analyze lesson plans and other written materials on the curriculum, but only a few lesson plans were available and there was no written syllabus.

Planners

The planner of this program was a university graduate in Social Work who was 30 years of age. She had been in that position for the past five years. Her job responsibilities included fund raising, authorization of payments, management of staff, liaising with government authorities, and working with its planning committees. Professionally, she is a social worker and felt that her university training was adequate for her job responsibilities. When asked whether the nutritional program was addressing the nutritional needs of families, she felt that it was because many referrals were being sent to the centre, which is an indication that the community values its services. In her own assessment of the general performance of the program, she thought that things were running well. She rated the general performance of the program, the support she gets from the local people, and the general contribution of the program to the community as satisfactory.

Implementation of the Program

In terms of implementation of the nutrition program, both the coordinator and the implementers felt that they worked with very few resources and a large number of mothers. They indicated that they experience constraints in terms of money, personnel, and physical facilities because they covered a very highly populated area. For example, the classroom could only accommodate 20 mothers at a time, and yet, there were many mothers with malnourished children in the neighbourhood. The coordinator indicated that she made maximum use of available resources so that the few staff she had was able to cover as much ground as possible and that they tried to see as many malnourished children as their resources could accommodate. The major problem they faced was lack of personnel. The program had, so far, only one woman, who had received a short six months training in nutrition.

The rest of the implementers were volunteers, recruited by the community chiefs because of their reputation in the community, regardless of their educational backgrounds. They received weekly training in nutrition and other related subjects for a period of one year. Unfortunately, there was a high rate of drop-out (75%) in the volunteer group because of lack of rewards.

Evaluation of the Program

The centre planner indicated that there has been only a single evaluation of this program conducted in 1989 by a private researcher. The purpose of the evaluation was to determine whether issuing of relief food was undermining developments in the area. The research report indicated that this was not the case. (The evaluation report was unavailable to the researcher to verify its findings.) The curriculum aspect of the program has not been evaluated at all and, in the opinion of the centre planner, may be in need of evaluation.

Reasons given for the high rates of malnutrition

The Coordinator of the nutrition program held a number of beliefs about the causes of high rates of malnutrition in the community. The major reason given was large family sizes. The average number of children per mother attending this program was six. Social problems such as alcohol and drug abuse were common. Most of the mothers were also engaged in brewing illegal alcohol (Chaang'a) as an income-generating activity, and in the process ended up being addicts themselves. Poverty was prevalent in the area with many mothers coming from deprived homes as children and now having no means of providing for their own children. Many lived in the slums, and their income was less than 2,000 Kenyan shillings (equivalent to $55 US) per year, a figure that is well below the country's poverty line. Infection, mainly from communicative diseases, was rampant in the area. Many children suffered from frequent illness such as malaria and diarrhoea due to polluted water and poor environmental sanitation. Ignorance was also a factor in the causation of malnutrition. Many mothers were illiterate or semi-literate and were not aware of the nutritional values of foods. The elites had also contributed to the problem of malnutrition in the area by forcing some of these people from their land and by neglecting to improve the infrastructure and basic social services in the area.

An initial visit to women participating in the Nutrition Education Centre provided evidence to support many of the coordinator's opinions about the participants and their social and economic circumstances. Most importantly for this study, it confirmed that these were women with low incomes, living in a peri-urban setting, and actively participating with their children in a nutrition education program.

Methodology

Methodological approach

"Qualititative research is a research approach in social sciences that deals with an in-depth description and explanation of processes occurring in local contexts" (Miles & Huberman, 1984, p. 21). These studies are alternatively referred to as ethnographic, exploratory, interpretive, and case studies (Erickson, 1986). Ethnographic studies focus on ways of doing and seeing things peculiar to certain cultures. The goal of ethnographic studies is to describe and discover the cultural meaning systems that people use to organize their behavior and interpret experiences (Spradley, 1979; Lincoln & Guba, 1985). The core activity of ethnographic approaches aims at understanding another way of life from the subject's point of view. Therefore, in conducting field work, the researcher starts off with a conscious attitude of complete ignorance, and makes inferences from three sources: 1) what people say, 2) the way people act and 3) artifacts people use (Spradley, 1979).

Qualitative research is normally undertaken for the following reasons: to provide a means of checking and measuring non-sampling error; to provide data on topics for which survey methods are inappropriate (for instance, for data that cannot be quantified and requires description of social behaviour); to generate hypotheses; and to create a separate but complementary data base to which quantitative data could be compared (Eisner, 1991; Mileds & Huberman, 1984; Lincoln & Guba, 1985).

In these studies, the researcher is attempting to portray the work and circumstances that typically are presented in a natural functioning society. The human as opposed to pencil-and-paper instrument is emphasized in the collection and interpretation of information. "The informants are the primary source of data for the study, and the investigator the primary instrument" (Sandelowski, Davis & Harris, 1989, p. 81). In this type of study, the researcher is the main instrument in data collection and data emanate from how the researcher experiences what it is she/he attends to (Spradley, 1979).

In this study, the intent was to portray and interpret the experiences of women living in a peri-urban low income area in Nairobi (as previously described in this chapter) from the perspective of these women. A quantitative methodology would have been inappropriate in this study because the data required could not be quantified without losing the character of each woman's personal situation.

Design of study

The design of this exploratory study required interviewing the mothers in natural (home and community centre) settings. A multi-method approach employing direct observation, informant interviews, and documentation was used in order to help provide credibility to the data. The observations were documented in the form of field notes. These observations were written down immediately after the researcher left the research area in order to ensure that the details were not forgotten. Informal conversations with informants and nutrition program staff were also written up as field notes.

For the informant interviews, an ethnographic approach was used that employed a semi-structured interview guide. This type of approach provided the investigator with a sense of understanding of the underlying beliefs, explanations, and meanings that people have for certain events of their life (Spradley, 1979). The phenomenon under study was explored from the informants' perspective.

An informal semi-structured interview is normally a list of questions or issues that are to be explored in the course of an interview. With such an approach, an interview guide is prepared to make sure that information is obtained from a number of people by covering the same questions (Patton, 1980). The interview guide provides topics within which the interviewer is free to explore, probe, and ask questions that will elucidate and illuminate that particular subject. Thus, the interviewer remains free to build a conversation within a particular subject area, to word the questions spontaneously, and to establish a conversational style (Patton, 1980). With this type of technique, some degree of flexibility is maintained because the wording and sequence of interview questions are adapted by the interviewer in response to the respondent (Archetberg, 1988).

The advantage of an interview guide is that it ensures that the interviewer has carefully decided how best to use the limited time available in an interview situation. Also, the interview guide helps to make interviewing of a number of different people more systematic and comprehensive by delimiting the issues to be discussed. When compared to other methods of qualitative data collection, the semi-structured interview provides the greatest amount of information, the most correct information, and an efficient use of the available time (Archteberg, 1988).

Direct observation is a primary technique for collecting data on overt, nonverbal behaviour, but it can also apply to any observed behaviour, including verbal interactions and external or environmental events. It is the preferred method when one wants to study in detail a behaviour that occurs in some particular setting. The advantage of using direct observation is that data are collected as they occur in the participant's natural environment, which increases the validity of the data and decreases bias that is introduced by incomplete memory of events (Bronfenbrenner, 1979).

Selection of Informants

The informants were purposively selected, to meet a set of criteria appropriate to the study objectives. They were first of all selected because they were within the locality of the research interest and were enrolled in the community-based nutrition program. Beyond that criterion, only mothers who were likely to provide useful information about the topic of inquiry and those who showed keen interest in the project were selected. The selected mothers had also been in the program for over three months, were responsive, had children with varying levels of malnourishment (from mild to severe), and were keen to participate in the study. Finally, they were required to have lived in this community for a period of at least one year. This period of time is the minimum necessary for individuals to become familiar with a local culture (Spradley, 1979).

Of the twenty mothers attending the nutrition education program, a research advisor from Kenyatta University identified ten who would meet the above criteria. The researcher approached these ten mothers and asked them if they were willing to participate in the study. All women agreed to participate, although one was later dropped bringing the final total number of women interviewed to nine. This small number of women to interview was adequate for this study, because of its exploratory nature and because the researcher was interested in obtaining an in-depth view of factors influencing the mothers' understanding and use of nutrition information. Such interviewing produces a large amount of text, or verbal data, from each respondent and it is essential to keep respondent numbers small to make it possible to analyze the data.

Gaining Access to the Informants

The study received approval from the Ethics Committee of the Department of Educational Foundations and the Kenyan Government, which was necessary before initial contacts could be made. The informants were then selected through contacts with the program coordinator of the Nutrition Centre. The researcher visited the Centre and was introduced to the mothers by the coordinator. Before doing the formal interviewing, she had casual conversations with the mothers on two separate occasions in order to build rapport. Building rapport with the women was relatively easy because the researcher was a native of Kenya and spoke the main family language used by the women.

On the second visit with the mothers, the interviewer briefed the mothers about the project and their role as informants. The researcher explained the purpose of the research project by telling the mothers that she was interested in learning about them, the program they were attending, the health conditions of their children, their understanding of foods and nutrition, their ability to feed their family, and their experiences as adult learners.

Ethical Considerations

Potential informants were approached and briefed on the nature and purpose of the study. During that time, a verbal rather than a written informed consent was obtained from the informants since most of the informants were either illiterate or semi-literate. At the onset of the study, the researcher assured the informants of strict protection in terms of invasion of privacy. She also assured the informants of strict confidentiality about the source of information. This was facilitated by protecting the identities of the informants. When extreme cases of nutritional deficiencies were encountered, the researcher rendered appropriate support and counselling during data collection and arranged for appropriate referrals afterwards.

Interviews

One hour-interviews were arranged. This amount of time was determined by two pilot studies undertaken before the actual study. Permission to use a tape recorder was obtained from the women. Interviews were conducted in a form of a friendly conversation, with the interviewer using an interview guide. The interviews were conducted in the homes of the informants at a time convenient to them and when possible, a quiet place was used for conducting the interviews. During the entire period of the research project only minor interruptions, such as the informant answering the door or giving a child something to eat, were experienced. The interviews were conducted in Kiswahili because it is a language that most mothers are conversant with and comfortable in. It is also spoken by the researcher as it is one of the Kenyan official languages and is, with English, the medium of instruction in Kenyan schools.

After the interviews, the information was transcribed and translated into English by the researcher. This was done in one step, as transcribing was done in English while listening to the tapes in Kiswahili. As data analysis proceeded, if problems arose which might have been a result of translation, the tapes were listened to again to ensure the translation into English was correct.

During the interviews, the informants were requested to provide information on their own socio-demographic data, their understanding of nutrition, their ability to feed themselves and their families, and their experiences in the program, especially as adult learners. The researcher allowed the informants freedom of expression. She used probes and gestures such as gently nodding her head to encourage the informants to talk more, and clarity probes such as "can you say more about that." In cases when the mothers did not address certain factors that were the focus of the study, the researcher restated the questions. When the informant was not responsive at all, the interview was usually rescheduled. In one case the researcher dropped an informant, because it proved impossible to engage her in conversation related to the research questions. The informant would, in most cases, give contradictory information, disagree about the topic of the enquiry, and become very defensive if asked to stick to the topic. In other cases, silence was recognized as an opportunity to reflect or meditate and was treated as a normal and routine event during the interviews.

During the interview, the interviewer also observed the general surroundings of the housing unit, type of housing, the interior of the house, furniture, cooking and serving facilities, general sanitation, and the health conditions of the children to fill in gaps in the interview data.

Recording the Information

Note taking and tape-recording were the techniques used for recording information. Field notes were taken from the initial visit in the community until the final day of the research project and were based on visits with key program personnel (coordinator, planner, and implementers of the nutrition program) and mothers. Field notes were taken because they provide reminders of key terms and details that make for the credible description and interpretation of data. Tape-recorded interviews were employed because they provide one of the most complete and expanded accounts of data (Spradley, 1979). Verification of data was ensured by playing the interview recordings immediately after the interviews to the informants so that they could add information or make corrections immediately.

Piloting the Interview Guide

A pilot study was conducted with two mothers in a similar program but in a different locality. The information from the pilot study was used for revising the interview schedule, as well as to help provide interview focus and to identify sensitive issues. These interviews also provided useful information regarding timing of the interviews and data analysis. The participants were asked to comment on the interview process, questions, sequence, wording (whether appropriate and understandable), and reasonableness of the interview with respect to its demands on the informant, for example, and the time involved in the interview. Appropriate revisions were made in the interview schedule.

Analysis of Data

Organization of Data

The interview transcripts and the field notes were typed with a large margin on each side of the page. After transcribing the interviews, four copies of the transcripts were made to facilitate the analysis of data. Analysis began by reading through the transcripts line by line and noting significant words or phrases, making comments on the left and right margin about what the informants were saying, and the patterns or issues that were emerging from the data. The left margin was used to write the researcher's comments or questions that arose when coding data. It was useful to have comments or questions next to the line that precipitated the thought. On the right margin, the researcher wrote simple codes reflecting what was in the data. In this process, the informant's own words were used as much as possible. These labels served to organize data into themes by "cutting and pasting" in order to make sense of data. This aided in data interpretation.

Thematic Analysis

Data were analyzed for patterns and themes within a particular setting. As the codes and categories developed and relationships were noted, certain hypotheses were formulated. Analysis of data involved summary profiles of the informants. The next step involved a form of data reduction and a preliminary analysis whereby the raw field notes and observations were systematized and organized to make the entire data set more amenable for further analysis (Miles, 1979).

Analysis of the transcripts began with substantive coding of the interviews. The substantive codes are the initial codes that are generated from data because they describe the substance of raw data. These substantive codes reflected the action in data. These substantive codes were compared with each other. As they were compared, some codes seemed to cluster together, and these clusters became categories. Clustering the substantive codes into categories served to develop the properties of the categories. These properties were then compared with properties of other categories in order to find interchangeable indicators. These connections led to collapsing of some of the categories under a broad category (some umbrella term under which all the categories generated fitted). Important topics were coded and broad categories were constructed (Spradley, 1979).

As incidents were compared to incidents and category was compared to category, some categories emerged to form an encompassing category. These categories were given names that were descriptive and captured the action in the setting. Data were then separated by virtue of similarities and differences. There was no judgement in terms of what the informants were really saying. Each word of the informants was taken as it was said.

In this study, because of the research question regarding conceptual and theoretical approaches to nutrition education, and the decision to use the Aoki Critical Reflection curriculum orientation and the Achieving Health For All framework (Epp, 1986) as sources for these concepts, the final categories were formed when several codes naturally clustered together based on these models. That is, these two frameworks (Aoki and the Achieving Health For All) were used in the analysis of data. However, due to the nature of data collected, only a few concepts such as ways of knowing, views of the people and their world, and primitive levels of reflection were actually used. Lacking were critical reflections, which is to be expected because the data collection forum did not provide opportunities for the kind of group work which is necessary for critical reflections to develop. Future research entailing participatory action might however overcome this shortcoming.

Validity and Reliability Issues

In qualitative research, validity refers to the adequacy of a description as a representation of a social situation (Eisner, 1991). Within this context, validity concerns are frequently directed to developing strategies to confirm findings. In this particular study, validity was confirmed by the informants' verification of data after the interviews. This was done by replaying the recorded tapes immediately after the interviews to verify that the information recorded was really what the informants wished to say. In cases where there was need for clarification of information given, this information was recorded at the very end of the taped interview. Verification of the information is one way of ensuring trustworthiness of the information collected (Spradley, 1979). Another way validity was ensured was to ask interview questions in different ways. Validity was also achieved by the researcher selecting the informants rather than the informants volunteering (Field & Morse, 1985).

The issue of reliability was addressed in a number of ways. One way was by making the transcript available for audit by the thesis committee at any time during the study period. Bogdan and Biklen (1982) and Lincoln and Guba (1986) state that a researcher can also establish reliability by learning as much as possible about the context in which the phenomenon occurs, by reflecting, by writing about her/his biases and assumptions, and by having colleagues comment on the data and its interpretation. Reliability was also strengthened by the researcher providing a detailed description of the women interviewed, enabling readers to determine whether other studies were done on similar or different populations.

CHAPTER FIVE

FINDINGS AND DISCUSSION OF THE STUDY

This chapter focuses on the findings of the study and concentrates on the demographic information, themes that have been generated as a result of the study, and data that address research questions. This chapter also discusses findings and major research observations that could lead to future research. It concludes with a thesis argument.

Selected Social and Demographic Data

For the nine informants of this study, family size ranged from three to six members. Seven informants were married, one was divorced and one was a single mother. Most (eight of the nine) informants lived in one-roomed, low-cost housing units. Their houses had mud floors and walls except for the concrete houses of three informants. The majority of the housing units were rented, and the rent ranged from 150-250 Kenyan shillings per month (five to eight Canadian dollars). Only two informants lived in houses owned by relatives. Most of the houses were temporary and difficult to access, were crowded, and lacked electricity, water or bathroom facilities. Latrine facilities outside of the houses were shared between four to eight different families. Water was normally bought from a nearby water vendor at a price ranging from 30 cents to one shilling. Water shortage had an impact on the food habits and general sanitation in the community.

Informants belonged to two tribal groups, Luhya and Luo, which may have been because each urban slum was inhabited by people from specific ethnic backgrounds. Three of the informants belong to the Catholic Church, two to the Rachial Maria, one to the Divine Church, one to the True Mission Church, one to the Quaker Church, and one did not belong to any church. They ranged in age from 16-41 years and most were raised in rural areas, with only two of them being raised in the city.

Two of the informants had no formal schooling, one informant had standard four, standard five, or standard seven, while four had a standard eight education. None of the mothers had formal education beyond elementary school.[1] Most of those who had schooling (five of the seven informants) did their schooling in the rural areas; only two of them were schooled in the city. All of the informants indicated that they left school early because they came from large families (more than eight children per mother) who lacked school fees necessary to send everyone to school. All (100%) of these informants came from polygamous homes where mothers had sole responsibilities for their children, including the cost of schooling. Therefore, in their childhood families, where there were more than eight children per woman, it was not possible to educate all of the children. This trend, where women have sole responsibility for the family welfare, regardless of availability of household resources, was common among the women interviewed. The same trend would be found among men in the lower economic status, in that their mothers would also have taken the major responsibility for their well-being, but the result for men is different in that they tend to follow their father's behaviour and take no responsibility for their biological children.

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[1] Schooling in Kenya is generally started at age 6 and consists of eight years of elementary school, standard 1 to 8, and four years of secondary school, form 1 to form 4. In 1992 68% of children completed at least elementary school but at the time the women interviewed attended school the figures would be considerably lower.

Most of the informants had no training beyond formal elementary schooling. However, two of the informants were able to take a tailoring course for one year and were engaged in the tailoring business. The business they were engaged in was not doing well due to the lack of capital and lack of training in business.

All of the informants had lived in the city for a period ranging from 4-12 years. Most of them had settled in the city and had no intention of going back to the rural areas, regardless of their economic conditions in the city. The informants indicated that they stayed in the city for the following reasons: 1) they did not have a piece of land in the rural areas (two women); 2) high possibility of success in business in the city, especially the vegetable business according to the informant (one woman); and 3) husbands, when left in the city by themselves, do not send money to their families on a regular basis (two women). Although, in all cases, the husband's income was not adequate to support all the family members in the city, in the last case, the wives opted to stay in the city with their husbands, so that they could experience the problems together.

Five of the informants were housewives, while four were engaged in tailoring or vegetable businesses. All the businesses were not doing well because of lack of credit facilities and poor management skills. None of the informants interviewed had any formal employment. Monthly income from businesses ranged from 200-400 Kenyan shillings. One of the husbands was employed permanently, three were employed as casual workers and three were unemployed but occasionally did construction work. Thus the husbands of all but one of the informants had erratic incomes.

When there was no income, mothers took action by soliciting church help and seeking help from relatives. The relatives helped initially when the problem of food shortages became acute, but at a certain point, they could not keep up because they too had responsibilities of their own. It was only when the mothers had run out of other options, that they turned to charitable organizations.

All the mothers indicated that their children had been sick during the preceding two weeks. Most of the children were suffering from diarrhoea, cough, cold, vomiting, malaria, high fever and/or measles. I noticed that one of the children had ringworm all over her head, one had a burn wound, and a third had ulcers on her body, even though these were never reported as illness. During the rainy months, because of the poor environmental sanitation in the area, the neighbourhood was prone to infestation by mosquitoes which carry malaria. Action taken by the mothers when the children were sick included giving a salt/sugar solution to prevent dehydration or taking the child to the nearest health clinic.

Most of the informants were referred to this program by nurses at the health clinics because their children were malnourished and they had been in the program for a period ranging from three months to one year and seven months. Two indicated that this was their second attendance in the program. The repeat cases were mainly due to poverty. All (100%) of the informants indicated that they did not experience any problems while attending the program.

Traditional foods that were consumed during their stay in the city included: maize-meal, local vegetables such as cowpea leaves, amaranth, pumpkin, kale, bitter local vegetables and spinach, cooking bananas, sweet potatoes, cassava, yams, beans, millet, fish, sorghum, and groundnuts.

Foods that were restricted because of traditional beliefs included: pork, goat, mutton, eggs, chicken, and Nile perch (fish). Five of the nine informants indicated that they could not eat one or more of these foods because of their cultural beliefs. Foods that were restricted because of religious beliefs included pork and beef. The reason given for not eating Nile perch was that it caused body rashes, whereas pork was cited because some churches believe that it is an unclean meat.

The informants themselves made decisions on food for family consumption. This is because, according to Kenyan traditions, women are responsible for all decisions related to food, including distribution of food within the household. When they bought food from local street vendors and in small quantities, they paid more than middle class groups, but most of the food for family consumption was bought from an open-air market because it was cheaper and closer. When food is bought in small quantities it is generally higher in price than food bought in large quantities. Because of lack of storage facilities and erratic incomes, the informants tended to buy foods in smaller quantities. In the households I visited, the best food was reserved for men, the children were next in priority and the women ate last. In the case of food scarcity, women skipped meals before other members of the family. This could have serious implications for women's nutritional status, particularly in case of pregnancy or lactation.

Description of an Informant

This section contains a detailed description of one of the women, to provide the reader with a better sense of the living conditions of the informants. However, this is not intended to be a 'typical' informant, but only a complete enough description to provide the reader with some image of the situation. Because of the differences among these nine women detailed descriptions are provided of all informants in Appendix 3.

This particular woman was 25 years old and illiterate, and was Luhya by tribe. She was married with three children, aged eight, four, and three years. She was currently practising family planning because she did not want to have more children since she could not afford to raise her present family. She was engaged in a small business of selling vegetables in front of her housing unit as she could not afford a stall at the market. The business, however, was not doing well because of lack of capital and business management skills. She indicated that she would like to continue with her current business if she could access capital. Her husband was unemployed but occasionally did casual construction work.

Her youngest child was severely malnourished and had ringworm all over her body, but the mother had not sought medical attention for it. The rest of the children looked unkept and stunted. None of her children attended school due to lack of school fees.

The family lived in a one-roomed mud house owned by the informant's mother-in-law. Availability of this house was a big relief for her since she did not have to pay rent. She indicated that the current housing unit was much better than her former house, which had been made out of plastic material and was leaky during the rain seasons. The room in this house was small and crowded, with little ventilation and a piece of clothing separated the living and the bedroom areas. The housing unit lacked electricity, water, bathroom, and toilet facilities. There was, however, an outside communal toilet shared by nine different families. Due to lack of bathroom facilities, the family bathed outside the unit after dark. Water was bought at a nearby water vendor at 30 cents per 5-gallon tin.

This woman had lived in the city for a period of nine years. She stayed in the city because she felt that there were better economic opportunities in the city than in the rural areas. She described city life as difficult and expensive. She indicated that she would like the nutrition centre to assist her with ways of helping her in future.

The Nutrition Education Teaching/Learning Process

The implementers of the nutrition education program received a short training of six months. These were individuals with a high school certificate who were interested in working with low income groups because they themselves had such backgrounds. Other implementers were a group of volunteers from the community who were chosen by the community leaders without taking their educational backgrounds into consideration. These volunteers received a short training on a weekly basis for a period of one year. The implementers, therefore, had little formal education or training to enable them to effectively implement the nutrition education program. Furthermore, among the volunteer group, there was a 75% drop-out rate due to lack of incentives such as money and other benefits. For example, in the case of this community-based program, out of the 40 recruited volunteer implementers at the beginning of last year, only 10 (25%) remained in the program by the end of the year. Therefore, the implementation of this program was hindered due to the high rate of drop-outs, which made it difficult to maintain a trained group of workers.

The implementation of this program also faced financial constraints. For example, the program did not have enough money to employ qualified implementers. The program had shortages of physical facilities and in the case of this particular program, the facilities could only accommodate 20 mothers at a time. The program was also rehabilitative in nature rather than preventive, that is only mothers with malnourished children under five years of age were admitted.

The teaching took place in a medium-sized room full of activities. It was noisy because both mothers and their children attended, and all of them seemed to be engaged in different activities. For example, mothers with small children were either breast-feeding or walking up and down the room to stop the babies from crying. It seemed unlikely that the teaching could be effective because mothers seemed not to be paying attention to what was being taught. In addition, distractions in the room made it rather impossible for one to actually follow what was being taught. The researcher's impressions were that mothers were mainly interested in the feeding aspects of the program.

The activities that took place at the centre generally followed a set daily routine. Immediately after the mothers arrived at the centre, children were fed on milk or a rich protein porridge. The women were then told to prepare and clean the food for the day. While the food was cooking, the nutrition lesson was taught using probing questions and demonstrations. The lessons were normally very short, lasting for a period of 15-20 minutes. The lessons focused on general hygiene, nutrition, care of the home and children, budgeting and buying of food, diseases and immunizations, malnutrition and its problems, family planning, food preparations, and feeding the children. After the lesson, a religious service was conducted which lasted 30 minutes and was comprised of scripture readings, singing, and prayer. By the time the service was over, food was about ready to be served. The nutrition staff supervised the serving of the food and feeding of the children; the children were fed first followed by their mothers. After the meal, the mothers cleaned up the room and left for home

The current teaching/learning process of this program could be described as a dialogue of elites, a dialogue only among the donors and the non-governmental organizations. They defined the problem, selected the strategies, and chose the implementing institutions without involving the mothers. The co-ordinator of this program saw the mothers as having needs but no resources, views, nor competencies and therefore felt the program was doing something to help these mothers. In other words, she thought that she was doing what was best for these mothers in their current situation of impoverishment. Indeed, that might have been the case, but the researcher thinks such programs are useful only on a short-term basis. What is needed are long-term programs that are self-sustaining so that the women do not keep coming back to the centre with malnourished children.

Findings of Interviews

Themes, inductively derived

As noted in the methodology chapter, there were two procedures used for identifying themes. The first of these was the classic ethnographic procedure, based on Spradley and more recent work in grounded theory, in which the themes arise out of the data, through a process of inductive logic. The second was a procedure of checking these themes against the main elements in the Aoki reflective curriculum orientation.In this study, the question was whether or not the main themes in Aoki's orientation to teaching/learning arose spontaneously with these women who were, in fact, involved in a much more traditional process of nutrition education. These elements from Aoki were ways of knowing, views of the people and their world, primitive levels of reflection, and critical reflections which would lead to action for change. In the material which follows, the themes will first be identified using an inductive procedure. This discussion will be followed by addressing the extent to which this information answers the original research questions, posed in the introductory chapter. Then, the material will again be briefly analyzed using themes based on Aoki's reflective curriculum orientation.

Using the classic ethnographic procedure, the main themes were identified as difficulties finding support in city life, forms of support found to alleviate those difficulties, knowledge about health, nutrition and feeding of their children; and the major problem of lack of resources, especially money. Finally, there are a number of statements which relate to women's recognition of what was needed to improve their situation. (See detailed presentation of the data in Appendix 5).

Theme #1. Difficulties finding support in city life

The informants indicated that they found life in the city difficult, unbearable, unfriendly, embarrassing and expensive. In the first quote below, one informant clearly spells out her major problems as financial, whereas in the second another informant contrasts her city existence to rural life where there is at least some help from neighbours:

> My life in the city has been full of problems. Unlike my friends, I am lucky in that, I do not drink alcohol. My life became very miserable after I lost my job. I did not know where to turn for help then. .... The major problems, I usually experience are related to food, school fees, clothing and rent (Field Notes, I2, P7, L1-11)[2].
>
> I only see the bad side of it. For me life is miserable because everything is expensive and I can't afford many things. Even I have my sisters around in the city and we can not help each other because everyone is suffering. The rate of inflation is high. Life in the rural areas is now much better; in that when you are stranded, you can at least seek help from neighbours but not in the city. People here are very unfriendly; in that you can be dying in your own house and your neighbour does not really care what is happening to you (Field Notes, I3, P5, L5-18).

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[2] All field note citations provide the number given to each informant's interview plus the page and line number of the quotation from the field notes.

Other informants spoke of some of the advantages of city life, such as easier access to facilities, but they too expressed concern and anxiety about the lack of food for their children, the lack of income and employment and the absence of family support networks or the embarrassment of having to rely unduly on other family members for help.

Theme #2. Forms of support found to alleviate their difficulties

A variety of support systems had been identified and used by these women as they struggled with their situation in the city. These included churches, the nutrition education program itself, and family members.

> After searching and failing to get any means of survival, it is when I decided to join the Catholic Church and they have been wonderful to me (Field Notes, I2, P7, L1-11).
>
> To me, my main reason for coming here (to the nutrition centre) is to get something for my children to eat and also in the process, I do get at least a day's meal (Field Notes, I4, P9, L2-5).
>
> In the program, I share problems we as mothers encounter. In fact, I have come to make some good friends from such interactions. The teachers are also cooperative and understanding. They help out very easily and really make your experience in the program worthwhile. The teachers also help feed the children (Field Notes, I8, P9, L10-20).

The reference to relatives occurred in passing, in the context of responses to other questions, in statements such as the following: "The relatives are already helping me with my bigger children and so I try to take care of myself and two of my other children" (Field Notes, I2, P12, L21-24). "My father helps us regularly. Occasionally my husband gets some work and that helps out, but it is not reliable at all" (Field Notes, I7, P4, L17-19)."My brother-in-law has been the one who has taken care of us all along" (Field Notes, I9, P3, L24-25).

The Catholic church's role in the community was ministering and provision of relief food. The informants in the church's perception were viewed as objects and not subjects. The current church actions had no elements of empowering the local people.

Theme #3. Knowledge of health and nutrition

When asked to describe their children's' health status, most informants described it as not good. Children were currently sickly, malnourished and had no appetite. They also indicated major concerns with their children's health, recognizing the severity of their health conditions, but often indicating limited knowledge of what they might do to improve that situation. Thus, two participants describe their children's health as follows:

> These children of mine? I see they all do not look good. I am being told that the younger one is malnourished because I was not feeding him well, but all I know is that I was doing my best (Field Notes, I3, P5, L22-26).

> They are not well at all. They are constantly sickly and even at home when I do have little food for them, they do not eat well. A few days ago, they were diarrhoearing and vomiting (Field Notes, I4, P7, L12-16).

But at the same time, there was considerable knowledge of nutrition itself, and of nutritional diseases, displayed by some of the participants. For example, respondents replied to a question of their knowledge of nutrition before and after entering the program:

> I did not know much. For example, I did not know that I needed to give my children all the food from the three food groups such as protective, energy-giving and body-building foods. Now I do know at least that. I just used to give them foods that will keep them satisfied so that they do not cry (Field Notes, I3, P6, L17-22 & L25-26).

> Now at least I know that you are supposed to give children milk and when they reach five months of age, you should add other foods such as grains, fruits and vegetables to the children's' diet. You are also supposed to keep the environment clean so that it does not cause disease. I like the program. It has taught me a lot of things that I did not know (Field Notes, I4, P8, L19-26 & P9, L1-2).

> Now, I see as if I have gained much more in terms of knowing about kwashiorkor and marasmus. If a child has kwashiorkor, the body swells and the hair colour changes to brownish and the child has also a big stomach and the rest of the body is thin. Now for such a child, you should give her food such as eggs, milk and you should also provide foods from the three food groups namely milk, maize-meal and spinach or any fruit (Field Notes, I5, P7, L1-13)

Others showed little knowledge, although at least one had a clear idea about the outcomes of good nutrition, "a child who looks healthy, fat and is not sickly all the time" (Field Notes, I1, P12, L17-18). For another, "eating well" (Field Notes, I2, P9, L8) was all the description she could find for good nutrition.

Independent of how much knowledge they seemed to have acquired about nutrition, most described a very similar pattern of feeding their children. They fed their children unbalanced meals comprised of mainly starchy foods with little protein or fruits. The most common meal consisted of maize-meal and maize porridge. Most of the children did not consume the three meals of the day, namely, breakfast, lunch and supper. The mothers in most cases fed their children before feeding themselves and in case of food shortages did without food themselves. Porridge was the most common snack given during the day. The food preparation methods were poor. It consisted of boiling with little or no fat in cooking and in most cases, the food was overcooked thus destroying many of the valuable nutrients such as vitamins. The porridge was normally prepared in large quantities and left by the fire side to be consumed throughout the day, thus making it more prone to contamination by flies. It was also poorly prepared because it consisted of maize flour and water with no supplement such as sugar or fruit. The porridge was further diluted in order to stretch it for longer use:

> In the morning, I give her maize porridge prepared by adding a little sugar. I give her about one cup in the morning, another cup at ten clock and another cup at four in the afternoon. At lunch time, I give her mixed maize and beans which I normally just boil and add salt. In the evening, I prepare maize-meal and fried kale. And she normally eats very little, like maybe a quarter-cup kale and half-cup maize-meal. Before she goes to sleep, she may drink another cup of porridge. The porridge, I normally prepare a large amount in the morning and just warm it as it is needed (Field Notes, I1, P15, L6-19).

> I prepare tea without milk and half a loaf of bread for the three children and each drinks about an 8-oz cup. This is normally when I have money. At times when I do not have money, we normally do not have a morning meal or on the days we go to the centre, we have porridge or milk for the children there. At lunch time when I have money, I make maize-meal and boiled kale, In the evening, we normally eat the same. The foods I also prepare are normally not enough for the children. All I can say is that I try my best to feed these children, but the problem is that I just do not have the means to provide for my children (Field Notes, I7, P9, L6-21).

Theme #4. Lack of resources, especially money

In many different contexts, the participants spoke clearly about what they saw as their major problem, namely the lack of resources of all sorts but especially of financial resources:

> Mostly money and fuel problems. Sometimes I can be given the food by the church and lack the fuel to cook the food with. Then I try to go out and look for firewood on the outskirts of the community (Field Notes, I2, P12, L14-18).

> I would like to ask you that I appreciate the knowledge this program has given us but my question is what means does one use to practice what they have learned without the money? (Field Notes, I1, P16, L14-21).

> All I ask for is some help. I am really desperate. I have no clothing for the kids, no money, no food and right now, I don't have anything to survive on. I have nowhere to turn for help. Please help me (Field Notes, I4, P13, L13-17).

> I would like to solicit for some support because my husband has no parents and therefore we can not go back to our rural home in order to farm because he has no land there either. We are stuck here in the city and he is unemployed. My father who has been helping us is old now and almost to retire from his job and return to the rural areas. I pray that my husband finds some employment (Field Notes, I7, P10, L9-25).

Theme #5. What could be done to improve the situation?

The ideas about what could be done to improve their situation, not surprisingly, focused primarily on what they saw as the major problem, namely lack of money. Thus, one asked the researcher if she could get financial support from someplace:

> I would like to solicit for some financial support for my family from any organization.... I really would have liked these children to go to school even only if they can finish high school. I also would like to continue with my maize business if I can get some money to begin again. This is because this business used to fetch me about 400 Kenyan shillings a month (Field Notes, I2, P13, L1-14).

But over and over again, the image of help was primarily help which would enable the women to be economically self-sufficient, to 'help themselves'. Although there might be the hope expressed that their husbands could get a job, for these women in all cases income assistance involved some idea of a small business, some way to get them started or support their return to business activities.

> I would also have liked the nutrition centre to help us in terms of helping ourselves instead of us going to the centre every time our child is malnourished. I personally do not mind being helped find any job or some kind of training such as tailoring, so that I can help myself and my family (Field Notes, I7, P10, L9-25).

> I would like this program to help us so that we can become self-sufficient in future instead of us going back to the program again. I personally would have preferred to be assisted with a tailoring training, so that I can begin my own business. Now out of these questions you have asked us, how would you help us? (Field Notes, I3, P10, L16-23).

> If my husband can not find work soon, I may be going home in the rural areas and try on some business at home. The problem with vegetable business in the rural areas is that it is not good because almost everyone grows a vegetable garden. Anyway, I will wait and see how things go (Field Notes, I9, P9, L17-23).

> I would love to become a member of some of these women's groups because they are doing wonderful things like income-generating activities but my problem is that I do not have money to maintain the membership let alone registration (Field Notes, I1, P10, L12-17).

What if we consider these thematic findings in relation to the initial research questions set out ? Clearly, there is ample information on the mothers' understanding of nutrition, their ability to provide nutrition for their children, their experiences and attitudes in the program, and the cultural and economic factors influencing their understanding of nutrition. These will be summarized in the next section, then the adequacy of the nutrition education process in terms of the Aoki conceptual framework will be addressed.

The Data and the Research Questions

Question #1. Extent of Mothers' Understanding of Nutrition

There were mixed responses as far as this issue was concerned. For example, some informants did indicate that they had little knowledge of nutrition, but had learned a lot in the nutrition education program. Others indicated that they had some knowledge of nutrition before coming to the program which they had acquired from formal schooling, but they were not using that knowledge now because of economic difficulties. The findings of this study showed that many (6 of the 9) mothers understood nutrition, especially after being in the nutrition program. These findings agree with Drummond (1977) who reported that most people in third world countries are malnourished because of lack of access to land, credit, income and social services rather than lack of nutritional knowledge.

However, it is possible to question whether the mothers actually had acquired the knowledge they claim, because the same mothers were unable to identify their children's deficiency diseases until they were told of them by the nurses or the social workers. This in itself may imply the non-application of school knowledge to home settings. Nevertheless, most of the informants said that they used the knowledge acquired to feed their families whenever they had money.

The repeated attendance cases also raise questions about the mothers' understanding of nutrition. If mothers did indeed understand nutrition from the nutrition program, and if that knowledge was adequate for them to change their nutrition behaviour, there should not be repeated cases. But it was evident that poverty was a contributing factor in this issue. In addition, as most of these informants were forced to attend this program because they had a malnourished child, some viewed it as a waste of time.

Finally, as noted above, mothers indicated that the program knowledge was useful only when they had the money resources to practice what they had learned. This might imply that nutrition education by itself was not useful, but when supplemented with an income-generating activity, it may be beneficial in the long run.

Question #2. Mothers' Ability to Provide Nutrition for their Children

Many (8 of the 9) informants interviewed were limited in the provision of nutrition for their children because of poverty, unemployment, limited education, poor living environments, lack of fuel and limited incomes. Poverty was rampant in the area. Many (8 of 9) mothers had limited resources to meet the basic needs of the family. Most of the informants' husbands were unemployed thus making it impossible to have reliable food supply. Many (6 of 9) of the informants relied on outside help such as relatives, churches and the nutrition feeding program for their food needs.

Limited educational backgrounds contributed to the mothers' provision of monotonous meals for their children. There were some instances in the study group where mothers would provide white refined bread with tea without milk to children instead of providing a local staple like fermented sorghum porridge which is more nutritious. This findings supports Levinson's (1982) observation that where erroneous beliefs or traditions lead to poor use of nutrient source, nutrition education may be appropriate.

Overall, the state of malnutrition of children ranged from mild to severe based on the researcher's personal observations and clinical records. For example, three of the children had severe malnutrition, five had moderate and two had mild. The most common deficiency disease was protein-energy malnutrition. However, because of the interactions of these diseases, it was likely that these children were suffering from other nutritional deficiencies such as anaemia and vitamin A deficiency. The researcher was unable to verify these possible diagnoses because that was not the purpose of the present study.

Poor living conditions such as lack of bathrooms, toilets and water facilities exposed children to high morbidity risks. Hygienic standards for feeding the children were not high due to lack of water. Plates were stored dirty with flies and were often reused without washing. Children occasionally ate with unwashed hands. These behaviours obviously lead to high child morbidity. For example, all (100%) of the mothers interviewed indicated that their children had been ill during the past two weeks. This high morbidity interferes with nutrient utilization, thereby making children more prone to deficiency diseases. These findings agrees with World Bank, (1991) which reported a high degree of morbidity in children due to poor sanitation in Kenya. Kennedy and Oniang'o (1990) study on health and nutrition effects of sugarcane production in South-Western Kenya, found that the health and sanitation environment had the most impact on the nutritional status of the pre-schooler's growth. This suggests that child growth and survival will not be substantially improved in the short term either by income alone or by nutrition education.

The most common diseases in the area were diarrhoea, malaria, fever and coughing. This observation supports the reports of Cornia (1989) and the Central Bureau of Statistics (1989) that diarrhoea is the disease most commonly responsible for a large percentage of child morbidity and mortality in the developing world. However, improvement in water quality and availability has been shown to reduce incidence of diarrhoea by 40% (Cornia, 1989). Therefore, one approach to eradication of malnutrition is accessibility to clean water for the target group so that food that is consumed is available to nourish the body of the children.

Lack of cooking fuel limited the number of meals the informants provided for their children. Some of the informants said that they cooked only one meal a day, so as to save on the cooking fuel. For example, porridge for the children was prepared only once a day and served all day to the children to save on the fuel.

High inflation contributed to poor diets because their limited incomes could not purchase adequate food supplies for family food needs. The children's diets were poor and unbalanced. They consisted of starchy foods such as maize porridge and maize-meal, and lacked protein and vitamins.

Food preservation was a major problem. Safe food storage facilities were lacking. The food preparation methods were also poor, in that the basic method was boiling and little fat was used in the cooking. The foods were also prepared in an unhygienic manner and stored in an open environment thus making it more prone to contamination by flies. Diarrhoea often accompanied such habits.

Question #3. Mothers' Experiences and Attitudes in the Program

In general although many informants indicated that they had acquired more knowledge from the nutrition education program, they were not providing balanced meals for their children. The meals they provided for their children were nutritionally inadequate in terms of quality and quantity and were monotonous. A varied diet is more likely to furnish most of the nutrients needed for good health. Many of them however, felt that they were doing their best in terms of providing meals for their children despite their limited resources.

All (100%) of the informants indicated that their experiences in the program had been good and they had positive attitudes toward the program. They said that they had made good friends as a result of attending the program and that the instructors were friendly and cooperative. They also indicated that they would recommend someone else from their community to the program as a result of having had a good experience in the program.

The only setback was that only malnourished children, children below age five, and the mothers, were fed at the centre while husbands and the rest of the family members' needs were not addressed. The effects of this was that the rest of the family suffered neglect because mothers spent most of their time at the nutrition centre and were left with very little time to tend to family chores, including looking for food for the rest of the family.

Teaching / Learning Process Used in the Program

The instruction took place in a crowded and noisy room with a trainer who had a short six month training in nutrition. The curriculum was prepared by the program coordinator without inputs from the participants. The learning process did not appear to be effective because there were many distractions in the room such as children playing, babies crying and children being measured and monitored. At times, it seemed that the mothers and their children were more interested in the feeding aspect than the education aspect of the program. The instruction involved informal lecturing and demonstrations. Mothers were encouraged to ask questions and were later were involved in the food preparation and feeding of their children. It was however, difficult to ascertain how much learning took place because mothers did not have the economic means to put into practice what they might have learned. Therefore, participatory action research with the target population might provide new insights into this issue.

Question #4. Cultural and Economic Factors Influencing Understanding and Interpretation of Nutrition for these Mothers

Culturally since most of these informants were from Western Province where cultural traditions are strongly held, they stuck to their traditional foods during their stay in the city. Residing in the city however deprived them of many of the traditional cheaper foods found in the rural areas which contribute to a more balanced diet. Once in the city they were exposed to western foods which are equated with high status, but they are more expensive and less nutritious when compared to local staples such as sorghum. Females were disadvantaged because they were not entitled to inheritance and credit. In most cases because they were the chief care-takers of children they suffered mental, physical and psychological anguish in the provision of healthy diets to their children, especially in their state of poverty. It appears that men normally did not care about whether the children were fed or not because they were rarely at home to experience the children's suffering. However, men were not interviewed in this study, and it may be that they understood their relation to the family much differently.

Economically, most of these informants were living in a state of poverty. Many had no reliable income, while others were engaged in small businesses which were not doing well at all because of lack of capital and training. All of these mothers were illiterate or semi-literate, and all of them were unemployed and had no skills for most trades. Those who had standard 8 level of formal schooling were not doing any better financial or socially compared to those who were illiterate. This may imply the non-application of school knowledge to home settings, or it may imply that school knowledge is not helpful in respect to their lives. Most (8 of the 9) mothers complained that their life in the city had been difficult, unbearable and embarrassing because of the high inflation. Although most (7 of 9) of these mothers indicated that they had learned a lot from the nutrition education program, they were unable to put the information into practice because of economic difficulties. All of these mothers began attending the nutrition program because of poverty. Because of the economic hardships, these women were limited in their ability to purchase water, food, shelter, fuel, school fees and social services.

Politically, the women in this study were alienated. They were alienated from family support systems because they were in the city and did not have alternative support systems to rely on in case of problems. Being illiterate made it hard for them to communicate beyond face-to-face. But the core of their alienation was the lack of effective participation, leading to unrepresentative, often illogical and threatening policy at personal and local levels. Unlike the rural people, where there is an organized structure of participation and leadership because of the homogeneity of the rural population, the urban poor are an unorganized and mixed group with varying interests.

Absolute poverty, unemployment and high inflation has a negative effect on dietary patterns of these people. The basic diets were basically not well balanced and were inadequate in terms of quantities available. Mothers devised different strategies in coping with food insecurity at the household level. Some stretched the little amount of food available by diluting it. Others consumed only staple such as maize or potatoes constituting a meal. Some begged for food from relatives and outsiders while some went picking from market place left-overs or in dustbins. For these mothers provision of family food was a daily struggle.

The Contextual Model and Adequacy of the Nutrition Education Process

Aoki (1981), in his search for a broader curriculum framework, outlined three curriculum orientations; namely, the empirical - analytic, the situational - interpretative and the critical - reflective. The empirical analytical orientation is concerned with empirical knowing, the situational-interpretative is concerned with giving meanings and the critical -reflective is concerned with the critical knowing that combines reflection and action. A stance of critical reflection was adopted for these interviews. Four themes which emerge from the Aoki conceptual framework are ways of knowing, views of the people and their world, primitive levels of reflection, and critical reflections leading to action for change. Using these as thematic headings, the data produced by this research show the following patterns:

#1. Ways of Knowing

The most obvious 'way of knowing' displayed in these data is a 'school-like knowledge' focused on nutrition and health as the object of knowledge. Thus, the women report on the types of foods needed for their children's health, and on types of nutrition deficiency related diseases:

> I did not know much. For example, I did not know that I needed to give my children all the food from the three food groups such as protective, energy-giving and body-building foods. Now I do know at least that. I just used to give them foods that will keep them satisfied so that they do not cry (Field Notes, I3, P6, L17-22 & L25-26).
>
> Now, I see as if I have gained much more in terms of knowing about kwashiorkor and marasmus. If a child has kwashiorkor, the body swells and the hair colour changes to brownish and the child has also a big stomach and the rest of the body is thin. Now for such a child, you should give her food such as eggs, milk and you should also provide foods from the three food groups namely milk, maize-meal and spinach or any fruit (Field Notes, I5, P7, L1-13).

In spite of this knowledge, the mothers indicated that they fed the children unbalanced diets, consisting mostly of maize porridge. But they were also clear on why they fed the children this way; it was because they did not have money to provide a more adequate diet.

#2. Views of the people and their world

The view of people and their world displayed in these data suggest a heavy reliance on relatives and family as the normal structure for supportive relationships, with neighbours in the rural setting also being people to be relied upon. However, in the city, relatives are stretched to the limit and often unable to support, and neighbours are unwilling and not helpful. But other strangers, such as the women met in the nutrition education program either as instructors or women who share their problems of poverty, can also be supportive, and their very presence and assistance clearly makes life a little easier:

> Even I have my sisters around in the city and we can not help each other because everyone is suffering. .... Life in the rural areas is now much better; in that when you are stranded, you can at least seek help from neighbours but not in the city. People here are very unfriendly; in that you can be dying in your own house and your neighbour does not really care what is happening to you (Field Notes, I3,P5, L5-18).
>
> In the program, I share problems we as mothers encounter. In fact, I have come to make some good friends from such interactions. The teachers are also cooperative and understanding. They help out very easily and really make your experience in the program worthwhile. The teachers also help feed the children (Field Notes, I8,P9, L10-20).

#3. Primitive levels of reflection

But was there evidence of at least some primitive level of reflection, of recognizing the reality of their situation in relation to the nutrition education program they were doing? I would argue that there was, as these women clearly did not see their primary need as one of nutrition education, but one of money:

> I would like to ask you that I appreciate the knowledge this program has given us but my question is what means does one use to practice what they have learned without the money? (Field Notes, I1,P16, L14-21.)

Over and over again the women's responses indicated a need for money, for financial resources, for employment for their husbands. It is possible that they would not have provided adequate diets to their children even if they had sufficient income, but it would be difficult to challenge their own understanding of the situation, that is, that the current situation was one in which their most desperate need was for financial and related resources, not knowledge of nutrition. In this light, the woman who 'merely' brought her child and herself to the centre for food could be seen as a woman acting accurately on her own behalf, rather than a woman who did not make appropriate use of the nutrition program as an educational opportunity.

#4. Critical reflections leading to action for change

There is little evidence that the women are able to critically reflect on their environment and propose directions for change. However, their requests for assistance in developing small businesses display at least a first level of critical awareness, and it implies seeing possible economic directions, directions which would or might address their actual problem (shortage of money).

There is also a hint that at least some would have been easily persuaded to participate in small groups and discussions, the kind of work which is essential for the development of critical reflection and awareness, for they clearly enjoyed the opportunities provided by the nutrition program to meet and talk with other women, to share their problems. But there is no hint that they have been able to go beyond this first level of critical awareness to seeing the larger social, political, and economic forces acting around them, contributing to their general impoverishment and misery.

The women were not empowered in any way to handle their problem of malnutrition but instead they were treated simply as recipients of nutrition education. By doing so, indigenous knowledge systems were ignored. In addition even though they were other organizations and different professionals working in the same community, there were no efforts made to work jointly in addressing the issue of malnutrition.

General Observations that have Implications for Future Research

As is often the case in exploratory and qualitative research, with these data it would be possible to address many other questions than those asked by the researcher. However, four inferences which can be drawn from the study seem particularly worthy of noting. They are not necessarily new observations in terms of the literature, but identifying them in this kind of detailed qualitative research supports their importance. All of these observations challenge common assumptions about appropriate program approaches for low-income families.

°Inference #1. Mothers' diets deteriorate before their children's diets.

This inference is based on the observation that children seemed to be given priority when food was limited. Mothers would feed their children, but not themselves in such circumstances. If this inference proves to be true on a wider basis, then significant attention needs to be given to mothers' food and health needs especially in their reproductive ages. In addition, the quality of the mothers' diet may be an early warning indicator for compromised food intake on the part of their children, and poor child nutrition could indicate inadequate maternal nutrition. Interestingly, the inference is supported by the pioneering work of Agnes Higgins at the Montreal Diet Dispensary; she reported that among poor women there is a tendency to feed older children and leave themselves and an unborn or breast-feeding baby undernourished.

°Inference #2. Mothers have primary responsibility for the welfare of their children's food and health needs.

This was based solely on observations and interview responses that indicated that mothers were responsible for children's food, clothing and general welfare. Male members of the family were rarely in the picture as far as these needs were concerned. This observation is supported by Badir (1991) who stated that the family and the household environment has been largely the domain of women and it is the women who have had the major responsibility for its welfare. If this inference proves to be true, then significant attention needs to be given to mothers access to income-generating activities and employment opportunities. This is related to the crucial role mothers play in family welfare and to studies which have demonstrated that increasing women's income improves family's welfare whereas increasing men's income does not (Kaiser & Dewey, 1991).

°Inference #3. The nutritional status of low-income families is worse in the urban areas.

This was based on observations, interview responses and on the 24-hour food recall of children's diet which indicated that the women's and children's nutritional status was extremely poor, and that part of the reason for that was lack of personal and economic supports available in urban areas. If this inference proves to be true, then significant attention needs to be taken when designing nutrition intervention for the poor in urban areas. Current intervention programs in the urban areas are based on rural experiences.

One major difference between the urban and the rural population is in terms of attitudes; attitudes are very rigid and do not change easily in the rural areas unlike the urban populations who change according to advertising and other social influences. Rural exposure to modernity is limited as compared to the urban areas and self esteem is normally lower than that of the urban population. Thus in terms of food habits, one is more likely to influence changes in food behaviour with an urban population than with a rural population. In addition, for the rural population, one can recommend the growing of nutritious foods such as practising kitchen gardens unlike the urban population who have no access to such resources. Therefore, significant attention needs to be given to addressing the root cause of malnutrition, which in this study was poverty. Moreover, intervention programs for the urban poor need to reflect meeting the basic human needs.

°Inference #4. Participatory research has significant potential as an educational and community organizing approach.

This inference is based on the unintentional educational value of the research project for the participants. This study suggests that it might be possible to use research participants intentionally to meet nutrition educational objectives. An evaluation of the needs of the informants indicated that most informants had an increased awareness of their financial limitations and were anxious that the government and non-governmental organizations would learn about their situation and assist them. In addition, the informants had a limited social network. Therefore, if this experience is generalizable, research projects structured to ensure maximum involvement of the participants may be an innovative way to educate a hard-to-reach audiences, and a more effective way to stimulate community action by the participants than the more traditional top-bottom educational approaches.

The findings of this study indicates that malnutrition is a major social and health problem among the urban poor. However any efforts to address the problem of malnutrition must be considered as a part of the total system. For example, programs should not treat the symptoms without addressing the root cause of malnutrition. This study demonstrated that malnutrition is a symptom for both child and mother and yet many nutritional intervention programs never address the nutritional state of the mothers.

Thesis Argument/Conclusion

Malnutrition is prevalent in urban slums in Kenya in which the people suffer from a cycle of poverty. The cycle has symptoms: the bowed head of silent defeat, the smell of acute destitution, the resilient sign of survival. The signs are poor housing, lack of accessibility to water, poor living conditions, unemployment, and alcohol/drug abuse. Starting with limited or no education, the cycle moves to few life opportunities, low income, undernutrition and illness and circles back to a deepening poverty.

Nutrition education being offered at this centre is rehabilitative in nature. It treats symptoms rather than address the root causes of malnutrition. The practical approach in this type of education is with an assumption of the mother's ignorance being readily solved by nutrition education. The mothers may have lacked information, but a bias assuming ignorance veiled the nutrition educators' ability to really see and understand what choices these mothers had. What is repeatedly missing in the program design is the context of these women's existence. The educators need to understand the background, examine their poor health, search further for the causes and the ultimate consequences of these realities. Only as a total system can nutrition educators begin to understand the type of choices and opportunities these women have. This study showed that these mothers often had the nutritional knowledge, but lacked the power (money) to use in feeding their children. Most of the mothers experienced acute food shortages and were under considerable stress in acquiring and managing their food supplies. Their children's diets were sub-optimal, lacking in protein, fat, vitamins, and minerals. The mothers' personal malnutrition also limited their energy and options to solve other daily prevailing problems.

Studying nutrition within the social/political and economic context and acknowledging the specific forces maintaining poverty allows nutrition educators to see what choices people have and therefore to help design appropriate programs for such populations. Assessing the health of communities means looking at how disease and malnutrition are patterned. This in turn, leads to a scrutiny of resource allocation. Probing even further reveals the distribution of power, a determination of who controls decisions and resources. For mothers to come out of the web of poverty, there is need for self-reliance and personal empowerment. To be empowered, women need competency skills such as appropriate information, decision-making skills and authority, critical analysis, confidence and resources for action.

This study shows that nutritional status of poor people will not be improved by nutrition education alone, but by improved incomes, good sanitation, improved living conditions and empowerment of women. Kennedy and Oniang'o (1990) report that the health and sanitation environment had the most impact on the pre-schooler's growth, suggesting that growth will not be substantially improved in the short-term by income alone. More emphasis must therefore, be placed on environmental conditions, with particular attention paid to ways to improve the health infrastructure and living environments. Current nutrition education practices are not useful when poor people have no power to use that knowledge.

This study posits that unless certain aspects of the country's socio-economic, political and cultural structures are transformed, to make it possible for the poor people to have access to incomes and food, nutrition education efforts alone are meaningless. Advocacy for structural changes which will improve the economic situation of those living in poverty must be recognized as the primary responsibility of policy-makers, nutritionists, and low-income population themselves. What is required are long-term solutions such as land reforms and equal distribution of incomes, so that people have access to food. A development plan, which not only places all people at the centre of development, but also ensures their equitable participation and social justice is required. As suggested by Dodds, Parker, & Heines (1992), it is important to involve low-income people in the development, implementation and management of nutrition projects in order for programs to have any relevance.

CHAPTER SIX

CONCLUSION: FRAMEWORK FOR CHANGE AND RECOMMENDATIONS FOR ACTION

Based on the findings and conclusions drawn from this study; the fact that one's personal attributes, household environments as well as the socio-cultural and natural physical environments in which they live, all impact on women and children's nutritional status and the fact that family human development, values and the totality of the larger environments are contextual filters through which human beings reflect on the questions they raise, a contextual model has been designed to provides a framework for change in nutrition education.

A contextual model that addresses the problem of malnutrtion from different dimensions was developed because the problem of malnutrition is a multi-factorial issue that has to be tackled from a wide perspective. In this context all dimensions that affect human existence, namely political, social, cultural, and economic factors, have to be taken into consideration when addressing the problem of malnutrtion among low income people. Drawing from data of the present study, the Aoki critical-reflection curriculum orientation (1981), the Achieving Health for All policy document (Epp, 1986), Badir (1991) and Freire (1970), a reflective model for teaching nutrition education through action was developed.

The Contextual Model

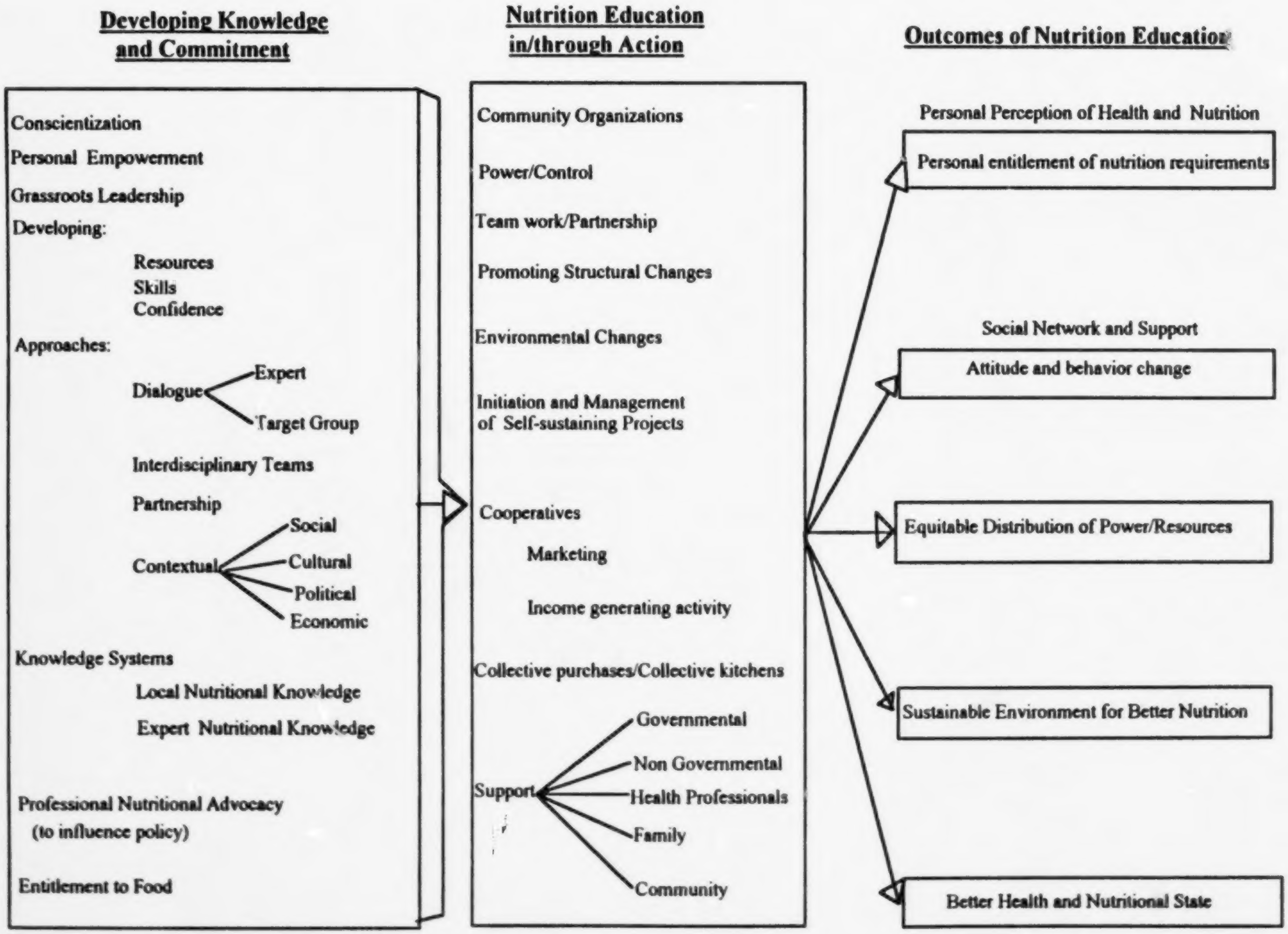
The model is presented on the following page. The first column concentrates on developing knowledge and commitment by all concerned in the process of nutrition education. It deals with actions that are needed for commitment to change in the process of nutrtition education. These include conscientization, personal empowment, grassroots leadership, and developing resources, skills, and confidence. Approaches such as dialogue between experts and people in the target group are advocated. In this dialogue, the emphasis is on appreciation and enrichment for both local and expert nutritional knowledge systems. Incorporation of interdisciplinary teams and working in partnership with commumunities concerned are strong points for this contextual model, and this should be carried out at all stages of the educational program. Furthermore, this column stresses an educational process that looks at human life contextually (that is, in terms of the social, cultural, political, and economic aspects of human experiences) and that addresses these factors in an educational process when attempting to tackle the issue of malnutrition. In the process of promoting the above actions, professional nutrtional advocacy to influencce policy should be instilled at all levels if there is to be a change in nutrtion education processes and programs. The overall goal of the knowledge and commitment development is entitlement to food by the needy.

The second column addresses the nature of the nutrition education process. The elements that are central to this process are; encouragement of community organization, bottom-up power/control, promotion of teamwork/partnership, promotion of structural changes, recognition of environmental changes, initiation and management of self-sustaining projects, cooperative promotions, initiation of collective purchases/kitchens, and provision of support systems from governmental and non-governmental organizations, health professionals, family, and community.

The third column deals with the outcomes of nutrition education. The elements that are central in this comumn are: improvement in personal perception of health and nutrition, personal entitlement to adequate nutritional requirements, social network and support, attitude and behaviour change, equitable distribution of power/resources, sustainable environment for better nutrition, and atttainment of better health and nutritional status.

Home economics philosophy states that individuals and families should be empowered to be self-directed, self-forming, and emancipated (McGregor, 1993). According to this philosophy, home economics professionals are mandated to help families achieve this empowerment. "They do so by ethically offering services to families such that they strive to be self-directed citizens. When offering a service using emancipatory actions, rules are developed through critical discourse and are guides to facilitate development of both ends and means through social policy" (Vaines, 1980, p. 133). To accomplish these realities, programs which are locally based and controlled and entail local knowledge are essential. Programs have to be relevant and what people themselves deem important. However, there is still the view in many places and organizations that women are recipients of intervention programs rather than participants who contribute significantly to the process and outcome. When there is a wide recognition of the role women play as providers of nutrition, then programs will be more committed to the provision of essential services such as water, fuel and income as an integral part of planned nutritional activities.

Figure 1. Reflective Model of Teaching Nutrition Education Through Action


Developing Knowledge and Commitment
Conscientization
Personal Empowerment
Grassroots Leadership
Developing:
Resources
Skills
Confidence
Approaches:
Dialogue
Expert
Target Group
Interdisciplinary Teams
Partnership
Contextual
Social
Cultural
Political
Economic
Knowledge Systems
Local Nutritional Knowledge
Expert Nutritional Knowledge
Professional Nutritional Advocacy (to influence policy)
Entitlement to Food
Nutrition Education in/through Action
Community Organizations
Power/Control
Team work/Partnership
Promoting Structural Changes
Environmental Changes
Initiation and Management of Self-sustaining Projects
Cooperatives
Marketing
Income generating activity
Collective purchases/Collective kitchens
Support
Governmental
Non Governmental
Health Professionals
Family
Community
Outcomes of Nutrition Educatio
Personal Perception of Health and Nutrition
Personal entitlement of nutrition requirements
Social Network and Support
Attitude and behavior change
Equitable Distribution of Power/Resources
Sustainable Environment for Better Nutrition
Better Health and Nutritional State

To be sustainable, programs should view women as facilitators of change rather than as passive recipients of development assistance (Wasilewski, 1993). To build a social order that is just, equitable and life-affirming for all people, programs have to be open and respectful of differences in people and must try to break down hierarchies, power and distrust (Wasilewski, 1993). In this case, sustainable nutrition implies a broader framework including ecological, socio-cultural, political, ethical and economic dimensions.

Nutritionists have to understand the context of the nutritional problems to help design effective programs (Prehm, 1991). Household decisions about nutrition must take place in the context of other demands on women's time, energy and other resources (Maina & Murray, 1993). When poverty is linked to large families, limited food availability, unemployment and lack of education, there is a restricted range in food choices among the poor people. Nutrition is intimately linked with other household needs and nutrition-related choices are made in an environment of competing demands for resources. Therefore, the diversity of women's needs and problems, and the means they use to meet their needs must be recognized when attempting to address specific problems such as improving household nutrition.

Nutrition educators are challenged to appreciate the contextual differences in order to augment their knowledge base as regards poor people's perennial food problems. The strategies home economists use to help poor people should encompass cooperation and mutual respect. Engberg (1989) acknowledged that learning to recognize and support locally-based indigenous knowledge systems through value appreciation and structural transformation empowers the home economist to contribute greatly to the solution of any family dilemma. This is especially true as regards to the particular challenging nutrition problems poor people in Kenya face.

Using these approaches, for example in a dialogue, the facilitator can assist the people to examine their children’s health, search further for the causes, and consider the ultimate consequences. Since the main problem of the peri-urban Nairobi mothers who were the subjects of this study is poverty and the causes of it are unemployment, illiteracy, lack of technical knowledge and lack of credit facilities, the facilitator working with such a group could encourage the people themselves to come up with their own solutions to these problems through dialogue.

For example, to involve the poor in their own nutrition education programs, local centres of activities such as churches, community centres and cooperatives could be approached to help organize programs. Grassroots leadership can then be recruited at these sites. To attract participants, an initial project such as an income-generating activity that would directly and materially improve their lives could be developed. As participants in the activity increase, nutrition education can be started. The wants and needs of the members could be determined during discussion group meetings. Through dialogue, nutrition educators would provide resources and act as facilitators to help the participants achieve their goals. The facilitator for such work should have a deep understanding of the economy and society of the impoverished group, compassion and sympathy with their plight, ability to inspire trust and confidence, and ability to motivate and guide them in a manner that enhances their confidence and self-reliance.

Only as a totality can nutrition educators begin to understand the type of choices and opportunities that poor people have. What is important to effect positive changes in nutrition intervention programs is to fit programs to the needs of the women to be served and the situation in which the programs will be taking place. Most important, the women themselves should have a part in defining both the approach and the timetable for programs. Initiatives will be more viable if rooted in women's concerns for their family (Blair, 1980).

Nutrition educators need to work more collaboratively with other groups who have health related interests to better accomplish this difficult task (Kieren, 1993). They need to share their expert power with other disciplines and poor people in order to develop and implement practices that engage people in developing and effecting their own solution. Furthermore, prevention programs have been criticized for their focus on cost effectiveness and for their emphasis on short-term results rather than the facilitation of long term change (Heller, 1990). In addition prevention models have been deemed inappropriate to handle moral, social and political problems such as poverty (Kieren, 1993).

Empowerment has therefore been suggested as an alternative practice paradigm in the issue of nutrition education. Future work should focus on preparing comprehensive guidelines on how to improve economic activities of women. The major obstacle in addressing this issue has been the lack of societal values placed on informal sector and reproductive work. In spite of these obstacles, before starting an income generating activity, it is necessary to examine women's work in the household, in the formal sector and in the informal sector. The researcher believes that individuals, family and community actions are essential if the world is to be transformed for the better.

Assessing the health of the communities means looking at how disease and malnutrition are patterned in a population. This in turn leads to a scrutiny of resource allocation. Probing yet further reveals the power distribution _ a determination of who controls decisions and resources. This is a structural analysis, studying nutrition within a social/political/economic context and acknowledging the specific forces maintaining the poverty cycle. The health of the people is far more influenced by politics and power groups, by distribution of land and wealth, than by treatment or prevention of malnutrition. The questions that need to be asked are, why did this happen, how did it happen, who benefits, who is responsible and what can be done and how?. Examining poor people's nutritional context entails looking at their poverty, isolation, and vulnerability, and seeking ways to overcome these barriers. While doing so, one needs to examine the household food filter, that is the family ecosystem, the development stages of the family and the value system (Appendix 6), for these will determine the nature of knowledge and approaches to be used.

In order for commitment of the people to lead to action, the following characteristics of competency leading to self-reliance are required:

° having correct information available and knowing the meaning of that information;

° having adequate skills enabling a person to do a job and do it well, including communication and group skills;

°participating actively in decision making with the means to change what is undesirable and to continue what is desirable;

° developing a sense of critical analysis when dealing with life situations, enabling recognition of implications of actions and anticipation of what will happen next;

° having the confidence and resources to risk action.

These factors interlock and play off each other; all are vital to building competency and all are necessary for both the nutritional educators and the low-income population. Focusing on the development of one or two factors to the exclusion of the others means stalling the competency process and continuing a charade of empowerment. Nutrition education that provides more and more information without corresponding attention to authority, resources, skills and confidence are mere pretences of enabling others to gain increased command over life events. By using all these competencies to self-reliance, the aim is to improve on social network support, increase individual entitlement to food and improve the general nutritional status of a population.

Summary

The participatory and the critical-reflection curriculum orientation frameworks were ideal models for analyzing and critiquing data from the interview scripts and developing a contextual nutrition education model for professionals working with low-income population in Kenya. Such frameworks if implemented might assist mothers themselves to identify community nutritional problems and come up with their own program design, implementation and monitoring procedures for a self-sustaining nutrition education program. The nutrition education process observed in peri-urban Nairobi was not adequate in terms of the proposed conceptual model because the atmosphere did not provide opportunities for personal empowerment, grassroots leadership, dialogue, and indigenous knowledge, and it was not holistic in its approach.

At present, Kenyan children and women's nutritional situation is in a precarious situation. The findings of this study showed that mothers understood nutrition but were unable to use that knowledge in feeding their families because of economic limitations. The educational information was adequate for these mothers except that most of these mothers were only interested in the feeding aspects of the program. Furthermore, it was difficult to ascertain if the mother's nutritional knowledge would translate into good nutrition practices since they were unable to implement it due to economic limitations. Mothers indicated that their children routinely took diets which neither satisfied their notions of good nutrition nor their personal food preferences. Their diet concerns on food selection was "getting enough to eat". Decisions about food expenditures were made in the context of long-term impoverishment and financial insecurity. Their regular food intake consisted of substandard and unbalanced diets.

Learning was not effective because the process was teacher-dominated and did not involve the mothers. The teaching/learning process was not effective because the teaching environment was noisy, crowded and full of distractions. The educational processes and knowledge based on factual knowledge was not adequate to change the nutritional status of families. It was merely based on a knowledge level and was lacking in synthesis and reflection. The planner of the program however felt that the nutrition program was addressing the nutritional needs of families and was satisfied with the general performance of the program. In contrast the implementers experienced shortages of money, personnel and physical facility resources for the proper implementation of the program.

Although many of these mothers continued to eat a limited kind of culturally prescribed diets they were deprived of many of these foods during their stay in the city because of economic hardships. The economic crises resulting from structural adjustment programs meant that women could not afford basic needs such as proper housing, adequate food, potable water and sanitation, making their exposure to illness and disease very great. There was lack of accessibility to water, and there was a high incidence of diarrhea and disease. The consequences of this situation resulted in high child morbidity as evidenced by this study. Because females were culturally and practically the chief care-takers of children, they suffered emotional, physical, and psychological anguish in the provision of food for their children, especially so in their state of poverty. Economic factors, mainly poverty, unemployment and high inflation limited the mothers' purchasing power of water, food, shelter, fuel, school fee payments, and basic social services.

The economic hardships experienced by the mothers in this study was absolute poverty. In some cases their very subsistence was in question, and in all cases their economic deprivation with respect to the general population was accompanied by a keen sense of impoverishment. The women's food problems were firmly rooted in the economic, social and cultural realities of this impoverishment. Less and poorer food quality, worsening shelter, reduced access to safe clean water and poor sanitation did indeed affected the children's morbidity rates. For the majority of the urban poor, the quantity and quality of all the basic necessities of life such as water, food, clothing and shelter are becoming less and less accessible due to the an ever increasing economic crisis. Clearly, social problems such as infection and long histories of poverty contributed to malnutrition.

Qualitative research has an important contribution to make to nutrition education. This type of research aims at understanding meanings, people's experiences and relationships to the environments in which they live. This research helped the researcher gain an understanding of the various factors that impede nutrition among a low-income population. It helped produce knowledge within the scientific realm which is integral to helping people be effective agents within their society.

Notwithstanding its limitation, this study does raise questions about the nature of nutrition interventions to help low-income mothers with acute and chronic food problems. When the underlying causes of food problems are primarily structural, one has to question whether short-term intervention strategies such as feeding programs and nutrition education are either efficacious or appropriate. Such interventions are incapable of promoting any significant long-lasting improvements in the food situation of the poor, given the severe and chronic nature of the economic constraints which largely determine intake practices. The researcher believes that short-term measures such as feeding programs alongside long-term, self-sustaining programs are appropriate to eradicate the problem of malnutrition among the low-income population. The programs should however entail local knowledge and grassroots participation. This is because most local people tend to disregard foreign knowledge because of its unsuitability. Advocacy for structural changes which will improve the economic situations of those now living in poverty must be recognized as a primary responsibility of professional home economists, dieticians and nutritionists.

Attention must be paid to increasing nutrition choices by policies for income maintenance for the poor. The nutrition policy requires a partnership between public nutrition educators, local authorities, community organizations, food producers, retailers and the people themselves. Moreover, there must be a focus on access to health (through reducing inequalities), the development of environments conducive to health such as improving their living conditions, the strengthening of social networks and social support, promoting positive healthy nutritional behaviours, and increasing dissemination of knowledge and information.

This study demonstrates to government and non-governmental organizations that there is a need to re-examine the rationale and approaches of nutrition education, and that nutrition education in itself is incapable of erasing malnutrition in Kenya. In other words, the study has demonstrated that unless certain aspects of the socio-economic, cultural, and political structures are transformed in order to make it possible for the poor to have access to land, incomes and food, nutrition education efforts are meaningless.

Based on the findings of this study, the following interventions are likely to reduce women's constraints to improving the nutritional status of their families: increasing women's income and control of income and productive resources, increasing women's productivity in households, and finally, improving women's own health and nutrition.

Implications of the Study Findings

As economic conditions continue to worsen in Kenya, the incidence of malnutrition is likely to increase tremendously in the near future. Current nutrition education programs do not seem to address the true causes of malnutrition. Instead, they have been concentrating their efforts on treating the consequences of malnutrition. This study has provided some insights into the issues of malnutrition and developed a contextual framework for nutrition education which enables nutrition educators and others to address the problem of malnutrition for low-income groups in Kenya. The results of this study are not generalizable in the statistical sense, but are intended to further program-relevant research on this topic. Furthermore, allowing mothers to provide their own perspectives enhances our understanding of their experiences. Subsequently, nutrition educators will begin to develop further investigations and nutrition interventions appropriate for low-income groups.

This research has provided useful information which will help policy makers in designing appropriate nutrition intervention programs. Nutrition policy-makers need access to such data, so that realistic intervention programs can be devised for target groups. Furthermore, for intervention planning, data on dietary patterns and knowledge are more useful than diets expressed in terms of nutrients.

This study has also shown how academic work can provide a useful foundation for practical interventions in nutrition education. The research has made evident the misconceptions underlying program planners approaches to the problem of malnutrition. It has shown that instead of the planners dealing with the root cause of malnutrition, they were addressing only its symptoms. This research approach facilitated an investigation of the mothers' food-related concerns as they defined them and provided insights into the context in which their food problems arose. Searches of research literature in nutrition and health promotion revealed that very little formal work has been done in the area of the overlap between these two. It is important therefore for public policy makers, researchers and practitioners to explore what this may mean for them.

Recommendations

The following recommendations are suggested as a result of the findings of this study:

Education

1. Efforts are required to raise mothers' consciousness, and mobilize and empower mothers through self-directed grassroots organizations, so that the mothers can reflect on their own problems and come up with their own solutions to these problems;
2. Since mothers' diets deteriorate before their children's, significant attention needs to be given to mothers' food and health needs in addition to the children's.

This is because the quality of the mother's diet may be an early warning indicator of problems developing in the food intake of the children themselves;

3. Education is needed to make mothers understand the interrelationship between water use, waste disposal and disease transmittal, and general principles of development ;

4. Since the informants who were engaged in business activities were not doing well due to lack of business management skills and technical knowledge (marketing, quality control and management), education in this area is needed in order to improve their management skills.

Programs

1. Efforts are required to start and support income-generating and training activities for these mothers, so that they can improve their living standards while a nutrition education component can be introduced;

2. Efforts should be made to involve the mothers in the need assessment, planning, implementation and monitoring of future programs;

3. Since all the mothers interviewed had limited access to water, efforts should be taken to make water available to this target population. Better provission of water might provide a focal point for community action which might lead to reduction of diarrheal diseases

4. Approaches focusing on improving the general environment, health facilities, infrastructure and general status of women through economic independence in the long-run, is likely to improve the nutritional status of low-income population.

5. other strategies recommended for improving accessibility to food are improvement in marketing and trade systems and increasing the economic power of the low-income groups.

6. Future nutrition intervention programs should involve personnel with community development and nutrition backgrounds in the designing, implementation and evaluation processes.

Policy

1. Since the root cause of malnutrition was poverty, fundamental changes in the area of asset ownership, employment and income distribution are necessary;

2. The cycle of undernutrition will be broken by instituting a well planned, mother-oriented integrated development program based on self-reliance and self-sufficiency. In addition, reforms need to be made in approaches to eliminate poverty and malnutrition at the local, regional and country level. These could include fair land distribution and equitable distribution of incomes so that all people can have access to food.

3. There is need for nutrition educators to persuade policy makers to follow a more contextual approach when addressing the problem of malnutrition. In doing so, they need to understand the social, economic, political, and cultural factors that may have caused malnutrition in the first place. There is need of a holistic approach to development before nutrition education can be self-sustaining.

Future Research

The following research studies are proposed after undertaking the present study:

1. Participatory research and development is needed as a follow-up to the present research on strategies relating to the eradication of malnutrition, combined with the recognition that research in all nutrition-related topics could be part of a process of nutrition education and change, a process of building the social infrastructure of communities of the poor.

2. More studies are needed to elucidated the experiences and perceptions of the poor of themselves;

3. Further qualitative research is needed in the area of nutrition intervention programs in Kenya so as to obtain a holistic picture of these programs;

4. Substantial and research is needed to help guide public policy-makers toward efficient and effective use of scarce resources in low-income peri-urban areas;

5. A quantitative research study is needed to test out inferences from the present research study.

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APPENDIX 1

GLOSSARY OF TERMS

The following words were used in the study and were referred to in the text:

°**Culture:** refers to the acquired knowledge that people use to interpret experiences and generate social behaviour.

°**Informant:** refers to a native individual within a culture who can be studied or have the potential to be a source of data for a study.

°**Ethnography:** refers to a study of cultural meaning systems; it is a search for relationships among symbols used by the informant.

°**Malnutrition:** refers to a state of impaired functional ability or development caused by inadequate or excessive intake of essential nutrients to provide for long-term needs.

°**Undernutrition:** is a condition which arises when an individual simply does not get enough food. The person is short in calories or protein necessary for normal growth, body maintenance and the energy necessary for ordinary activities.

°**Protein-energy malnutrition (PEM):** a term used to describe several types of deficiency conditions related to diets low in protein but with varying levels of calories from carbohydrates.

°**Kwashiorkor:** is a deficiency disease which is caused by a diet which is low in protein but generally adequate in calories.

°**Marasmus:** is a deficiency condition which is caused by a diet which is low in both protein and calories.

°**Development:** is a process involving the combination of empowerment, capacity-building, growth and equity and is characterized by self-sustainment and ecological harmony.

APPENDIX 2

INTERVIEW SCHEDULE

These questions were used to structure the interviews with mothers who attended the nutrition education program. As the interviews were in Kiswahili the wording was not exactly as indicated here in English, rather the questions served to remind the researcher of topics to be covered. The interviews were conducted as lengthy conversations around the social, economic and cultural factors that influence food consumption patterns. Mothers were encouraged to express their own views about these factors and time was taken to probe for additional information. The interviews were in Kishwahili and were audiotaped; in addition, the researcher wrote notes as the interview proceeded to provide a reliability check on the data being collected.

Section A: Socio-Demographic Data

I would like to start by asking you a few questions about yourself and your family. Please take your time to answer the questions to the best of your knowledge. If you do not feel comfortable about answering any of the questions l am going to ask you, please feel free to let me know.

A.1 Now can we start by you describing your household to me?. How many people live in your household? What are their ages and sex?. What type of housing unit do you live in? Does your housing unit have water and excreta disposal?.

A.2 What is your ethnic background? Where is your original home? Can you tell me what your tribe is like in terms of food habits/eating patterns? Are there some food restrictions that apply to certain members of the family? If so what kinds of foods are restricted and why?

A.3 What is your religious background? How does your religion affect what you feed your family?.

A.4 What is your educational background? Have you had any training beyond formal schooling?

A.5 Do you work outside the home?. Where do you work? What exactly does the job entail?

A.6 Can you tell me what your husband does for a living? Do you think that he makes enough money to meet the basic needs of the family? In case he does not make enough money, what do you do in order to supplement family income?

A.7 Where did you live before coming to the city?. Can you tell me what life is like for you living in the city?

A.8 Can you describe the health conditions of your children? Has any of your children been ill during the past two weeks? If so, what kind of illness were they suffering from? And what action did you take when they are ill?

Section B: Nutrition Knowledge and Knowledge of the Program

In this section, I am going to ask you some questions about your knowledge of nutrition and the nutrition program you are currently attending

B.1 How long have you been attending this program?

B.2 How would you describe your nutritional knowledge before coming to this program?

B.3 Can you tell me your knowledge and skills in foods and nutrition now?. Do you use this knowledge in planning and serving meals?

B.4 What does the phrase "good nutrition" mean to you now?

B. 5. How is the nutrition education taught?

B.6 What is your general experiences in this program?

B.7 What are your attitudes towards this program?

B.8 Do you think being exposed to nutrition education helps to improve the nutrition status of your family?. Why?

B.9 What are your learning experiences as an adult learner?. Are there stigmas attached to you because you are an adult learner?

B.10 What are your general perceptions of the relevance of this program?

B.11 How have you personally benefited from this program?

B.12 After attending this program, would you recommend someone else in your community to attend it?

B.13 What are some of the problems you experienced in this program as a learner?

Section C: Eating Patterns

In this section, I am going to ask you to tell me about some of the foods you feed your youngest child.

C.1 Who normally decides on the type of food used for family consumption?

C.2 Where do you get most of the food for family consumption? Who chooses it?

C.3 If food is generally bought, where do you normally buy your food from? .

C.4 Can you tell me some of the foods that you normally feed your youngest child from the time he/she gets up in the morning up to the time she/he goes to bed at night? Can you also tell me how the food is normally prepared and quantities given at each meal?

C.5 Tell me some of the concerns you have when deciding on what to feed your children?

C.6 Tell me some of the problems you encounter when trying to provide for food needs of your family.

C.7 From your own personal experience, tell me some of the strategies that might help ease up some of these problems you have so far in terms of meeting your family food needs.

C.8 Further observations/comments.

APPENDIX 3

DESCRIPTION OF INFORMANTS

Informant #1

Informant #1 was 25 years old and illiterate and Luhya by tribe. She was married with three children aged 8, 4 and 3 years and was currently practising family planning because she did not want to have more children as she could not afford to raise her present family. She was engaged in a small business selling vegetables in front of her housing unit because she couldn't afford a stall at the market. The business was not doing well because of lack of capital and business management skills. She indicated that she would like to continue with the current business if she got access to capital. Her husband was unemployed but occasionally did casual construction work.

The youngest child was severely malnourished. She had ringworm all over her body but her mother had not sought medical attention for this condition. The rest of her children looked unkept and stunted. None of the children attended school due to lack of school fees.

The family lived in a one-roomed mud house owned by the informant's mother-in-law. This was a big relief for her since she did not have to pay rent and she indicated that the current housing unit was much better than her former house which was made out of plastic material and was leaky during the rainy seasons. The room was small and crowded, with little ventilation and a piece of clothing separated the living and bedroom areas. The housing unit lacked electricity, water, bathroom, and toilet facilities. There was, however, an outside communal toilet shared by nine different families. Due to lack of bathroom facilities, the family bathed outside the unit after dark. Water was bought at a nearby water vendor at 30 cents per 5-gallon tin.

This woman had lived in the city for a period of nine years. She described city life as difficult and expensive. She indicated that she would like the nutrition centre to assist her with ways of helping herself in future.

Informant #2

Informant #2 was a very out-going 41 year old divorced mother of five children. She however looked much older than her age. The children were aged 21, 18, 14, 7, and 2 years, and 7 months. Only two of her youngest children lived with her in the city. The older children lived with her relatives in the rural areas because she couldn't afford to live with them since she was unemployed. She was Luhya by tribe and had a standard four level of education. She was unemployed but was engaged in volunteer ministering work for a nearby Catholic Church. The Catholic Church and her relatives assisted her in meeting the basic needs of her family. Her ex-husband didn't assist her at all. She indicated to me that he didn't want anything to do with the children.

She had come into the city because she had been divorced and was not entitled to family inheritance. She therefore saw no source of livelihood in her rural home. Her family in the rural areas also saw her as an embarrassment to them. She came into the city to find means for providing for her family.

She lived in a one-roomed mud house. Rent for the house was 150 Kenyan shillings per month. The housing unit lacked electricity, water, toilet and bathroom facilities. Water was bought at 50 cents for a five gallon tin. The room was clean and sparsely furnished.

She described her life in the city as full of problems. Due to such problems, she joined the Catholic church and they have been very helpful to her. The church even paid school fees for her 7-year old child. She however, would like to solicit help with school fees for her children. All she craved was to see her children go through high school. She would also like some capital to start a maize business.

Informant #3

Informant #3 as a 24 year old mother who was a Luhya by tribe. She was very presentable in the way she was dressed but her children looked unkept. She was married with three children aged 5, 4, and 11 months. She had a standard 8 level of education and was raised and schooled in the rural areas. She had been in the city for a period of 4 years. She was currently unemployed but previously worked for a juice factory in the city: she had to quit her job because she didn't have a maid to look after her children. Her husband worked as a casual labourer in the city where he earned a daily wage of 50 shillings. The income was not adequate to meet the minimum basic needs of the family. When she worked she had been able to supplement his income.

The health status of her children was not good. They all looked wasted. The youngest child was severely malnourished and was suffering from malaria and vomiting. He was also severely burnt on his left arm and the mother was trying to hide it from me. I advised the mother to take him for medical care. The mother seemed not to care about the general welfare of her children.

This informant lived in a fairly modest house according to the housing standards in that community. It was a two-roomed concrete house. The housing unit was fairly organized and furnished with worn-out furniture. It lacked electricity, water, bathroom and toilet facilities. The toilet facilities were shared by other families and the general sanitation was poor.

Her main concern was for the nutrition centre to help her so that she could become self-sufficient in the future and not need to keep returning to the centre with repeated cases of malnourished children. She particularly would like to be assisted with a tailoring training so that she could start her own business.

Informant #4

Informant #4 was a single mother of 4 children aged 12, 4, and twins 6 months old. The 12 year old daughter lived with her uncle, her father's brother, in another part of the city. The uncle was also the girl's father, as he had taken advantage of this woman when she came to the city to live following the death of her father . (An example of an incidence of incest). The twins were 6 months old but were severely malnourished and looked as if they were barely two months old. The chances of survival of these babies was minimal considering their home environment and the general situation of the family. The mother herself looked frail and almost semi-starved; she indicated to me that she had not had a meal the previous night.

This informant was illiterate and Luo by tribe. She was unemployed and the church and her relatives assisted in making ends meet. She however had worked as a casual construction worker before she conceived the twins. She no longer does that work because she has no one to look after her children. Her relatives seemed to have run away from her. Also, she did not have much energy since she had not had good nutrition during her pregnancy and the lactating period. She indicated that her breasts were dry and didn't have any milk for her babies.

She lived in a one-roomed mud house with a roof that was leaking. It was the worst housing unit among the ones visited. The housing unit itself was sparsely furnished, very untidy and smelled of urine. It lacked electricity, water, toilet and bathroom facilities. The toilet facility was shared among four other families but it was hardly used because of its poor and generally unsanitary conditions. Water was bought at a nearby water vendor at 30 cents per 5-gallon tin. She rented the house for 100 shillings per month. Before she had the twins, a man friend paid rent for her but after he discovered that she was expecting, he left and she has not seen him since. Sadly, she did not even know his rural home. She relied on the church and her relatives to assist her in paying rent and she indicated to me that there have been occasions when she has been thrown out of her house for non-payment of rent.

She had lived in the city for a period of 11 years. Life for her in the city was expensive and she did not have clothing, bedding, and food for the twins. She lacked moral and physical support from her relatives. She lived in a state of absolute poverty. For her life was a daily struggle and there no hope for the future.

Informant #5

Informant #5 was a 16-year old married woman with one child aged 2 years. The child, however, was born out of wedlock. She was Luo by tribe. She had a standard 8 level of education and had been raised and schooled in the city. After formal schooling, she had acquired tailoring skills from one of her relatives who has a tailoring business in the city. She was engaged in a tailoring business of her own and earned 400 Kenyan shillings from her business. Her husband worked as casual mechanic in the industrial area of the city and had a monthly income of 600 Kenyan shillings per month. Both their incomes were, however, not adequate to make ends meet, because they were responsible for other members of their extended families in the rural areas.

The son was moderately malnourished. The mother herself was more or less a child and not very conversant with proper child care practices.

She lived in a one-roomed house. The house lacked water, electricity, toilet and bathroom facilities. Water was bought at a nearby water vendor at 50 cents per 5-gallon tin. The general housing sanitation was poor because of shortage of water. Her rent for the house was 150 Kenyan shillings per month.

She felt that life in the city was hard but 'okay' since everyone minded her/his business, unlike the rural areas where there is lots of gossip. There was some kind of naiveté in her from her interview responses and she didn't seem to take life seriously unlike other informants interviewed. It was as if she had some kind of "I don't care" attitude in her. For example, she was the only informant who did not have any concerns as far as the nutrition program was concerned.

Informant #6

Informant #6 was a 21-year old mother of a son aged 2 years and 6 months. She was married and was Luo by tribe. She was raised and schooled in the rural areas and had a standard 8 level of education plus one year of tailoring training. She was engaged at her own tailoring business in her house, earning about 300 Kenyan shillings per month from it . Her husband was employed on a permanent basis with a Coke Cola company in the city. His monthly earnings were 1,600 Kenyan shillings per month. This kind of income in such a community was sufficient to provide good nutrition for a one-child family. It would seem that incidence of malnutrition in this family was a question of mismanagement of resources rather than a lack of resources.

The child was moderately malnourished and according to the mother, had been ill for the past 4 months. The mother had taken this child to several places for treatment including a visit to the witch doctors but without success; that is why she finally took him to the health clinic. From the home environments and the general child care, the researcher observed that there was very little application of school knowledge to home settings. This mother behaved like a person who had not gone to school at all.

She lived in one-roomed concrete house. The room was sparsely furnished and a piece of clothing separated the living and the bedroom area. It lacked electricity, water, toilet and bathing facilities. The toilet was on the outside and shared with other families. The sewage system nearby was stinky and the smell made the housing environment very uncomfortable.

She had lived in the city for a period of five years. She saw life in the city as both good and bad. It was good because the facilities were closer and people were well dressed, but bad because one lacked moral and physical support from family and relatives in case of marriage problems.

Informant #7

Informant #7 was a 22-year old friendly and outgoing mother. She was married with four children aged 7, 6, 5, and 2 years. Her husband was 32 years old and she indicated to me that her parents forced her to get married to this man. The eldest child lived with her relatives in the rural areas and none of the children were in school due to lack of school fees. She had a standard seven education.

She was unemployed as was her husband, but the husband occasionally worked as a casual construction worker. Her father assisted them on a regular basis but she was worried because her father was planning to soon retire from his job and return to the rural areas.

The youngest child was mildly malnourished and had fever. She had also an ulcer on the left upper arm which had not received medical attention. The researcher advised them mother to seek medical attention. The rest of the children were wasted and unkept.

She lived in a rented one-roomed mud house. The room itself was much smaller than the one previously described. It was crowded and dirty. It also lacked water, toilet and bathroom facilities. The rent was 150 Kenyan shillings per month but the family had problems meeting the rent and had been thrown out several times due to non-payment of rent. The family could not go back to the rural areas because the husband had no parents and land to go to.

She had lived in the city most of her life. Life for her in the city was difficult and frustrating especially when the little children were hungry and she didn't know where the next meal was going to come from. Life was an every day struggle. She would like to solicit support to be self sufficient, and was interested in a job or training in tailoring so that she would be able to help her family.

Informant #8

Informant #8 was a 22 year old mother of three children aged 6, 4 and 1, and 6 months. She was married and was Luhya by tribe. She had a standard 8 level of education and was raised and schooled in the rural areas. She had been in the city for the past five years and was engaged in a small business of selling vegetables in front of her house because she could not afford a stall at the market place. She had, however, suspended her business due to her son's illness. Her husband worked for the Kenya Broadcasting Corporation on a permanent basis and earned a monthly salary of 2,000 Kenyan shillings. Although this was a modest income in such a community, she indicated that due to her daughter's schooling expenses, they were finding it difficult to make ends meet.

The four-year old son was severely malnourished. The youngest child looked much bigger and healthier than the four-year old child. He had been recently hospitalized due to a combination of pneumonia, malaria, vomiting and measles. The son's illness had taken a great toll on the general welfare of the family. Everything in the home was neglected due to this illness. The mother indicated that she hardly slept at night and had lost a lot of weight due to the son's illness.

She lived in one-roomed modest concrete house. The house was crowded and untidy. It lacked toilet, bathroom and water facilities. Water was bought from a nearby water vendor.

She found life in the city unbearable and expensive and much preferred rural life because it was less expensive and community relationships were better than in the city. She had three acres of land at her rural home but could not live there because of her husband's employment in the city. She also indicated to me that whenever she lived in the rural areas, her husband never sent her money and therefore she decided to stay in the city so that they could all suffer together.

Informant #9

Informant #9 was a young woman in her early twenties who was Luo by tribe. She was married with one child. She had a standard five level of education and was raised and schooled in the rural areas.

She was unemployed as was her husband. Her husband occasionally worked as a casual worker, wherever he could find employment. She had started a vegetable business but had suspended it due to her son's illness. Most of the time they relied on her brother-in-law for financial support. The brother-in-law had a modest job in the city but had a wife and five children in the rural areas.

The son was severely malnourished and was suffering from fever and vomiting.

She lived in a two-roomed mud house that belonged to her brother-in-law. A piece of cloth separated her own room from the living and the bedroom area. The room was crowded and lacked electricity, water, bathroom and toilet facilities. Toilet facilities were shared among 8 different families. Water was bought from a nearby water vendor for one shilling per 5-gallon tin.

She described life in the city as good only if one has money and some form of employment. Without these two, one is just not living at all. For her life in the city has been embarrassing because they relied on her brother-in-law entirely for everything.

APPENDIX 4

Detailed Presentation of Data

This appendix contains statements used to generate the themes. They are organized according to initial categorizations of theme areas, and the number at the left of each statement is the number given the informant. The number in parentheses is a citation showing the page and line number where the quote is found in the field notes. The initial themes were Life in the City; Knowledge about Children's Health; Knowledge of Nutrition, Before and After Attending the Centre; Knowledge of nutrition produced in response to a question about "good nutrition"; Application of Nutrition Knowledge in Daily Life; How the Program Helped; Participants Consciousness of Their Situation and the Program's Appropriateness; The Nutrition Education Program as a Participatory Experience; Getting Help and Taking Action; and finally, The Major Problem in My Life.

Life in the City

#1. We as a family, we are simply finding it extremely difficult to survive. I most of the time find that I do not have even clothing for the family (P3, L18-21).

#2. My life in the city has been full of problems. Unlike my friends, I am lucky in that, I do not drink alcohol. My life became very miserable after I lost my job. I did not know where to turn for help then. After searching and failing to get any means of survival, it is when I decided to join the Catholic Church and they have been wonderful to me. The major problems, I usually experience are related to food, school fees, clothing and rent (P7, L1-11).

#3. I only see the bad side of it. For me life is miserable because everything is expensive and I can't afford many things. Even I have my sisters around in the city and we can not help each other because everyone is suffering. The rate of inflation is high. Life in the rural areas is now much better; in that when you are stranded, you can at least seek help from neighbours but not in the city. People here are very unfriendly; in that you can be dying in your own house and your neighbour does not really care what is happening to you (P5, L5-18).

#6. It has both good and bad things; the good things are that the facilities are closer so that you do not walk for miles before you reach the shopping and health facilities. The other thing is that one is better dressed up in the city than in the rural areas.

The bad thing is that when one has marriage problems, you have no one to turn to for help because most of your relatives are in the rural areas (P3, L21-26 & P4, L1-4)

#7. I have lived in the city most of my life. All I can say is that life is very difficult especially when you have little children and they are hungry and you do not know where the next meal will come from. It is really frustrating for me. All I worry about is whether the children will get a meal in a day (P6, L4-11).

#9. Life is only good if one has money and some form of employment. Without these two, one is not just living at all. For me, it has been embarrassing because we rely on my brother-in-law for everything (P4, L19-23).

#3. I get very bad reactions from my neighbours because every morning whenever I leave the house, many say to me that I don't have food in my own house and that is why I go to the centre. That I am wasting my time there. But I say to myself that I will not listen to them because I personally know what is taking me there (P7, L18-26).

#1. Most of them (my neighbours) think that I go to work. The few that ask me, I tell them and they seem anxious (P14, L5-7).

#5. They always think that we are being helped here. They are also seeing my child a bit better, not sickly as before (P9, L18-20).

#9. I do not care what they say, but I am sure that when they see my child's health improve they will be surprised (P7,L18-20).

Knowledge about Children's Health

#2. She is not quite well, but I would like God to bless her so that she can grow up healthy (P7, L18-19).

#3. These children of mine? I see they all do not look good. I am being told that the younger one is malnourished because I was not feeding him well, but all I know is that I was doing my best (P5, L22-26).

#4. They are not well at all. They are constantly sickly and even at home when I do have little food for them, they do not eat well. A few days ago, they were diarrhoearing and vomiting (P7, L12-16).

Knowledge of Nutrition, Before and After Attending the Centre

#1. I had known a bit, because I had been in this program a few years back because my second-born son child had poor health and so I used to take him to the centre and he got well and that is how I got to know about nutrition (P11, L24-26 & P12, L1-2).

#3. I did not know much. For example, I did not know that I needed to give my children all the food from the three food groups such as protective, energy-giving and body-building foods. Now I do know at least that. I just used to give them foods that will keep them satisfied so that they do not cry (P6, L17-22 & L25-26).

#6. We had learned in school but the problem is that I find it hard to practice because it is expensive (P6, L19-20).

#4. Now at least I know that you are supposed to give children milk and when they reach five months of age, you should add other foods such as grains, fruits and vegetables to the children's' diet. You are also supposed to keep the environment clean so that it does not cause disease. I like the program. It has taught me a lot of things that I did not know, but I just wish that I had the money to implement whatever is taught (P8, L19-26 & P9, L1-2).

#5. Now, I see as if I have gained much more in terms of knowing about kwashiorkor and marasmus. If a child has kwashiorkor, the body swells and the hair colour changes to brownish and the child has also a big stomach and the rest of the body is thin. Now for such a child, you should give her food such as eggs, milk and you should also provide foods from the three food groups namely milk, maize-meal and spinach or any fruit (P7, L1-13)

#9. It has taught me about the food groups; the protective, the energy-giving and the body-building foods. It has also taught me how to identify and treat minor ailments in children. For example, when a child is diarrhoearing, you boil water and add sugar and salt and give it to the child and that makes the child not to loose too much water from the body (P9. L4-12).

Knowledge of nutrition produced in response to a question about "good nutrition."

#1. It means having a child who looks healthy, fat and is not sickly all the time (P12, L17-18).

#2. I do not know very well. Maybe eating well (P9, L8).

#4. It means eating good things like meat, eggs and etc. (P8, L14-15).

#6. It means having a balanced diet which normally consists of three food groups namely; body-building, energy-giving and protective foods (P6, L10-13).

Application of Nutrition Knowledge in Daily Life

#3. Yes, I try to use it often when I prepare meals and whenever I have money to buy the food (P7, L5-7).

#4. I do not use it these days because I do not have money to buy food. So once I eat at the centre, that is it for me (P10, L20-22).

#5. Yes, I try to use it when I have enough money especially at the end of the month (P7, L17-18).

#6. Not at all the time because it is expensive to really eat a balanced diet at all meals (P6, L16-17).

#7. I try, but I do not use it daily because I can not afford it. For me my main concerns are to make sure that the children are satisfied. Whenever I get some money, I normally try to use the knowledge I have learned, but most of the time, I do not (P7, L18-23).

#8. I try sometimes when I have money, but I honestly do not use it all the time (P7, L4-5).

#9. These days I am using it because I want this child to get well (P6, L15-16).

#1. In the morning, I give her maize porridge prepared by adding a little sugar. I give her about one cup in the morning, another cup at ten clock and another cup at four in the afternoon. At lunch time, I give her mixed maize and beans which I normally just boil and add salt. In the evening, I prepare maize-meal and fried kale. And she normally eats very little, like maybe a quarter-cup kale and half-cup maize-meal. Before she goes to sleep, she may drink another cup of porridge. The porridge, I normally prepare a large amount in the morning and just warm it as it is needed (P15, L6-19).

#2. For Christine, I feed her on porridge prepared by adding milk and little sugar if I have some. She drinks an equivalent of an 8-oz. cup in the morning, at ten clock and four in the afternoon and sometimes at night before she goes to sleep. At lunch time, I normally prepare some fried Irish potatoes and some maize-meal and she eats very little because she does not like maize-meal. In the evening, we normally eat leftovers from lunch because it saves me from cooking again. I usually make enough food so that we can have leftovers for the evening. Sometimes when Christine eats at the centre, she does not normally feel like eating again whenever we get at home. She likes meat, but we cannot afford it. I normally provide it maybe once a month, whenever I get some money. Once in a while the Catholic sisters at the church will bring Christine eggs and she really likes that (P11, L7-26).

#3. When he gets up, I normally prepare maize porridge and add milk and give him. I normally prepare enough porridge in the morning so that he can feed on it all day, usually a cup at a time. At lunch time, I prepare maize-meal with fish mixed together. That way, it is easier for him to eat. In case he does not like that, I give him porridge again. In the evening, I give him fried kale and maize-meal and he normally eats very little. He is generally a very bad eater. Sometimes, I try to force him to eat, but in most cases he does not comply and so, I leave him alone. But sometimes I feel bad, especially when he does not look well as is the case now (P9, L13-26 & P 10, L1-2).

#4. In the morning, I normally give them porridge prepared with just water and flour. I give them half an 8-oz cup each time they cry. Actually they feed on porridge all day. It is only at the centre that they get some milk. I know milk is good for them but I just can't afford it. As for myself when I eat at the centre, that is it for me. My four-year old son eats almost anything that is available. Sometimes he follows the neighbours' children and eats there if he is lucky. Things are just tough for me right now (P12, L7-21).

#5. In the morning, I usually give him maize porridge prepared by adding milk and sugar and I give him about one and half 8-oz cups about four times during the course of the day. At lunch time, I prepare fish and maize-meal and he usually eats very little of that. In the evening, I normally prepare fried rice and carrots and he might eat about half a cup or so. He is usually a picky eater. He only takes milk at lunch time and I give him about one cup and the rest he might take it in the tea whenever we make it. I usually make tea whenever I have a visitor. I give him porridge as a snack (P10, L12-25 & P11, L1).

#6. At breakfast, I give him one 8-oz cup of milk, at ten clock, I give him maize porridge with little sugar added. At lunch time, I give him about a half a cup fried Irish potatoes. In the evening, I give him about a half a cup fried rice and then maybe another cup of porridge before he sleeps. It also depends on his appetite and what he likes. For example, he likes milk and porridge and I try to give him these foods."(P7, L14-23).

#7. "I prepare tea without milk and half a loaf of bread for the three children and each drinks about an 8-oz cup. This is normally when I have money. At times when I do not have money, we normally do not have a morning meal or on the days we go to the centre, we have porridge or milk for the children there. At lunch time when I have money, I make maize-meal and boiled kale, In the evening, we normally eat the same. The foods I also prepare are normally not enough for the children. All I can say is that I try my best to feed these children, but the problem is that I just do not have the means to provide for my children (P9, L6-21).

#8. In the morning, I normally give them a cup of tea with milk and a slice of bread each. At lunch time, I give them fried Irish potatoes and cabbage mixed and each would eat an equivalent of one cup except the boy because of his illness has a poor appetite. In the evening, I give them kale and maize-meal. These are typical meals especially during the first two weeks of the month. There after things are different because there is usually not enough money to go around. I give porridge as snacks at ten in the morning and at four in the afternoon (P9, L14-25 & P10, L1-2).

#9. Usually I do not have much and therefore, I prepare maize porridge and add some lemon and give him about one cup at a time in the morning and whenever he is hungry. At lunch time, I prepare kale mixed with an egg and serve with maize-meal and in the evening, I serve leftovers from lunch or if I have some money, I serve fried fish and some maize-meal. I usually give porridge and milk as snacks (P8, L16-23 & L26-P9, L1).

#1. I worry about the money because that will determine what to buy (P15, L23-24).

#2. I normally do not plan the meals, but I just cook whatever is available. There is no need to plan when you do not know where to get the food anyway. Whenever I have some money, I prepare food that will make Christine satisfied so that she does not disturb me at night. I also try to buy food that she likes for example, she likes vegetables and so I try to prepare for her such foods (P12, L3-11).

#3. Money. Usually I buy according to the available money. I also try to buy the food that takes a short time to cook so that I save on the cooking fuel (P10, L5-8).

#4. I do not plan my meals because there is nothing to plan with in the first place. When someone gives me some maize, then I might boil for myself and my 4-year old son or I may make it into flour and make porridge for all of us (P12, L24-26 & P13, L1-3).

#5. Money is the determining factor. Normally at the end and beginning of the month, I am okay but around the middle of the month, I am so strained that it is not unusual for us to do with only one meal a day (P11, L8-13).

#6. I normally think of the time for preparing food because I do not have some help at the house and together with my business, I normally have little time to do little of anything else (P8, L3-7).

#7. I think of what I can buy cheaply with the money I have and usually I want to get more for the money I have. I also think of fuel for cooking the food (P8, L22-25).

#8. I think of the health of the children and them being satisfied too (P9, L5-6)

How the Program Helped

#1. It has helped me a lot in terms of taking care of my children. It has helped me particularly in the areas of general hygiene, disease identification and prevention, budgeting and food preparation (P12, L7-11).

#3. It has taught me a lot of things I didn't know before, such as family planning, food preparation, general hygiene. Plus in the process of attending this program, I got saved (P7, L10-14).

#4. To me, my main reason for coming here is to get something for my children to eat and also in the process, I do get at least a day's meal (P9, L2-5).

#6. For me, it has benefited me only in terms of feeding my child. It is somehow like a pass time for me, other than anything else (P8, L24-26).

#6. I personally perceive it to be useful for people who have no knowledge about foods and nutrition and for feeding the children (P6, L19-21).

#8. I have learned many things in terms of preparing food for my children. Long time ago, I used just to ensure that my children are satisfied and was not concerned with the nature of food provided, but these days, I try to follow instructions. I am really concerned about my son's health and I will do anything that will help him get well (P7, L18-25).

Participants Consciousness of Their Situation and the Program's Appropriateness

#1. I would like to ask you that I appreciate the knowledge this program has given us but my question is what means does one use to practice what they have learned without the money? I personally would have liked if the program could also have assisted us with means of support in order for us to be able to help ourselves (P16, L14-21.)

#1. The only way I can improve life in the city is if I can get someone to lend me some money to continue with my business. At least, I know that I will not fail (P10, L5-8).

#1. I would love to become a member of some of these women's groups because they are doing wonderful things like income-generating activities but my problem is that I do not have money to maintain the membership let alone registration (P10, L12-17).

#2. I would like to solicit for some financial support for my family from any organization. For example, recently, I got a letter from my rural home that two of my older children lack school fees and they are now just at home. My family back there want me to sent them little money but I do not have any money. I really would have liked these children to go to school even only if they can finish high school. I also would like to continue with my maize business if I can get some money to begin again. This is because this business used to fetch me about 400 Kenyan shillings a month (P13, L1-14).

#3. I would like this program to help us so that we can become self-sufficient in future instead of us going back to the program again. I personally would have preferred to be assisted with a tailoring training, so that I can begin my own business. Now out of these questions you have asked us, how would you help us? (P10, L16-23).

#4. I like it, but for me right now, it is of no use because after we leave it, then what next? Even the meal they give us, the serving portions are too small that my four-year old son does not get satisfied at all. I wish the centre could do more in terms of helping us be independent by finding some jobs for us (P10, L26 & P11, L1-7).

#4. All I ask for is some help. I am really desperate. I have no clothing for the kids, no money, no food and right now, I don't have anything to survive on. I have nowhere to turn for help. Please help me (P13, L13-17).

#7.I would like to solicit for some support because my husband has no parents and therefore we can not go back to our rural home in order to farm because he has no land there either. We are stuck here in the city and he is unemployed. My father who has been helping us is old now and almost to retire from his job and return to the rural areas. I pray that my husband finds some employment. I would also have liked the nutrition centre to help us in terms of helping ourselves instead of us going to the centre every time our child is malnourished. I personally do not mind being helped find any job or some kind of training such as tailoring, so that I can help myself and my family (P10, L9-25).

#9. If my husband cannot find work soon, I may be going home in the rural areas and try on some business at home. The problem with vegetable business in the rural areas is that it is not good because almost everyone grows a vegetable garden. Anyway, I will wait and see how things go (P9, L17-23).

The Nutrition Education Program as a Participatory Experience

#1. I enjoy the program because you discover that you are not the only one who is ignorant about things in general (P13, L13-15).

#8. It is good because it has helped me before, but sometimes I do not have time and so I do not attend it regularly. In the program, I share problems we as mothers encounter. In fact, I have come to make some good friends from such interactions. The teachers are also cooperative and understanding. They help out very easily and really make your experience in the program worthwhile. The teachers also help feed the children (P9, L10-20).

#5. It is okay because you get to know and share things with other women in the program. Through sharing you learn from one another. The teachers are also good in that they do not look down on us, but simply try to help us (P8, L21-26 &P9, L1-2).

#5. I do not mind being an adult learner: in fact I view it as some sort of training (P9, L5-6).

#8. I really do not mind it. All I am interested in is for my son to get well (P8, L15-16).

#8. The best thing I like about the program is that it has helped my son learn to talk through interactions with other children in the program. Through this program, I shared experiences with other mothers and we realized that we have similar needs. Our children are malnourished and we want them to get well, but we do not have the means to provide good nutrition for our children (P8, L2-7 & L10-12).

#9. I like the program because we share a lot and the sisters are very cooperative and helpful (P6, L19-21).

#1. Yes. There are so many women I have already recommended and are currently attending this program. Also whenever, I see a mother in my community doing the wrong things, I advise them and I feel good about it because I am sharing what I have learned with someone else (P13, L22-26 & P14, L1-2).

#6. No, especially my friends because there is nothing new they do not know already (P7, L3-5).

Getting Help and Taking Action

#1. We have relatives in the city, but as you know, life here is very expensive for everyone and so you can not blame a relative if they refuse to help you. We normally depend on church support or places like this centre. But the problem with places like this, is that the child who is being monitored and the mother are the ones who are fed, but then, what happens to the other children with the husband who are left home? (P8, L12-20).

#2. The relatives are already helping me with my bigger children and so I try to take care of myself and two of my other children (P12, L21-24).

#7. My father helps us regularly. Occasionally my husband gets some work and that helps out, but it is not reliable at all (P4, L17-19).

#9. My brother-in-law has been the one who has taken care of us all along (P3, L24-25).

#1. We just stay like that. We use whatever little we have at the house and when it is finished completely, we sometimes solicit for church support (P8, L6-9).

#4. I rely on the church for help and places like the nutrition centre where they can at least give us a meal (P5, L11-13).

The Major Problem in My Life

#1. The major problem I encounter is money. Without it one can not do much of anything. When I have money, I first of all ensure that the children have eaten something (P15, L1-4).

#2. Mostly money and fuel problems. Sometimes I can be given the food by the church and lack the fuel to cook the food with. Then I try to go out and look for firewood on the outskirts of the community (P12, L14-18).

#3. Yes, money problems especially when it comes to providing the foods the nutrition program talks about (P10, L11-13).

#4. All kinds of problems, food, fuel and time because sometimes the twins are so bad in that they don't want to be put down and so that makes it difficult for me to do anything else (P13, L6-10).

#5. Money is the biggest problem. Sometimes I find that I have no money to buy charcoal for cooking and therefore I sometimes end up preparing one meal a day because of that (P11, L16-20.

#1. You know the school fees they ask for these days are just too high for us to afford. And these days their father is not working and so it is very difficult to think of sending a child to school when you can not even afford to dress her, let alone feed her (P3, L7-12.)

#7. We rent the house for 150 Kenyan shillings a month, but our biggest problem every month is paying rent. In fact there have been cases when we have been thrown out for non-payment of rent or we have been forced to look for other accommodation because we have been thrown out (P4, L18-22).

#7. Actually I did not want to get married at all but I was forced by my father to get married to this man. My parents actually tracked me to this man's house (P4, L25-26 & P5, L1-3).

#9. My husband is unemployed right now but sometimes he works as a casual construction worker wherever he can find employment (P3, L9-11)

#2. Since I did not have a husband, my children were in need for school fees, clothing and other everyday basic needs. Also because I am no longer married, I couldn't be given a piece of land at the home where I was born because in my culture, women are not supposed to inherit property from their parents (P3, L9-16).

APPENDIX 5

Ted Aoki Critical Reflection Curriculum-Orientation (1981)

Ted Aoki's Critical-Reflection Curriculum Orientation views reflection as a root activity. In reflection, the actor through the critical analytic process uncovers and makes explicit the tacit and hidden assumptions and intentions held. It views people as individuals having potential to act upon their world in order to transform it (Aoki, 1981; Freire, 1970). This kind of curriculum orientation tends to lead to an understanding of what is beyond the surface; it is oriented towards making the unconscious conscious. Such reflective activity allows liberation from the unconsciously held assumptions and intentions that lie hidden. These hidden assumptions may be repressive and dehumanizing aspects of everyday life which people face in their personal and social life. Educational goals entail the posing of the problems of human beings in their relations with the world; the constant unveiling of reality and the striving for the emergence of consciousness and critical intervention of reality (Freire, 1970).

According to Freire (1970) in the participatory processes, the central concern is with the development of the moral, intellectual, technical and manual capabilities of the individuals. These kinds of projects imply that the initiatives in establishing the activities must be taken by the people themselves who should also be firmly in charge of their implementation and evolution. The initiation of development activities is preceded by a preparatory phase involving interaction with and among people concerned (mothers, local leaders and facilitator). This phase extending over long periods (1-5 years), may involve intensive discussions and dialogue, analysis and reflection and conduct of field work and social inquiry using the methods of participation promotion associated with conscientization and participatory research . This phase serves to instill discipline, build confidence, socialize members to the underlying philosophy and objectives of the initiative, raise consciousness, develop critical and analytical abilities and promote group solidarity and democratic practices.

The main elements of the Aoki Critical Reflection Curriculum Orientation Model can be summarized under the headings of the view of people, the ways of knowing, and implications for educational research. These elements are detailed in schematic form on the following page. For a more detailed description and discussion of this model see Aoki, 1981.

View of the people:

° Individuals in and within their world.
° People have potential to act upon their world.
° Probing underlying bases of action in order to expose intents and assumptions.
° Uncovering of consciousness.

Ways of knowing:

° Focus on criticism.
° Freeing the individual from dependence on taken-for-granted assumptions.
° Self-understanding (knowledge) and action.
° Reconstruction of ideas.
° Examination of metaphors employed by practioners.
° Theory/practice reciprocity.
° Interconnection of science and "social system" are made problematic.

Education Research:

° Need to ask the following kinds of questions:
1. What knowledge is to count?
2. Who will decide which knowledge is acceptable?
3. Why do we educate students in education (nutrition)*?

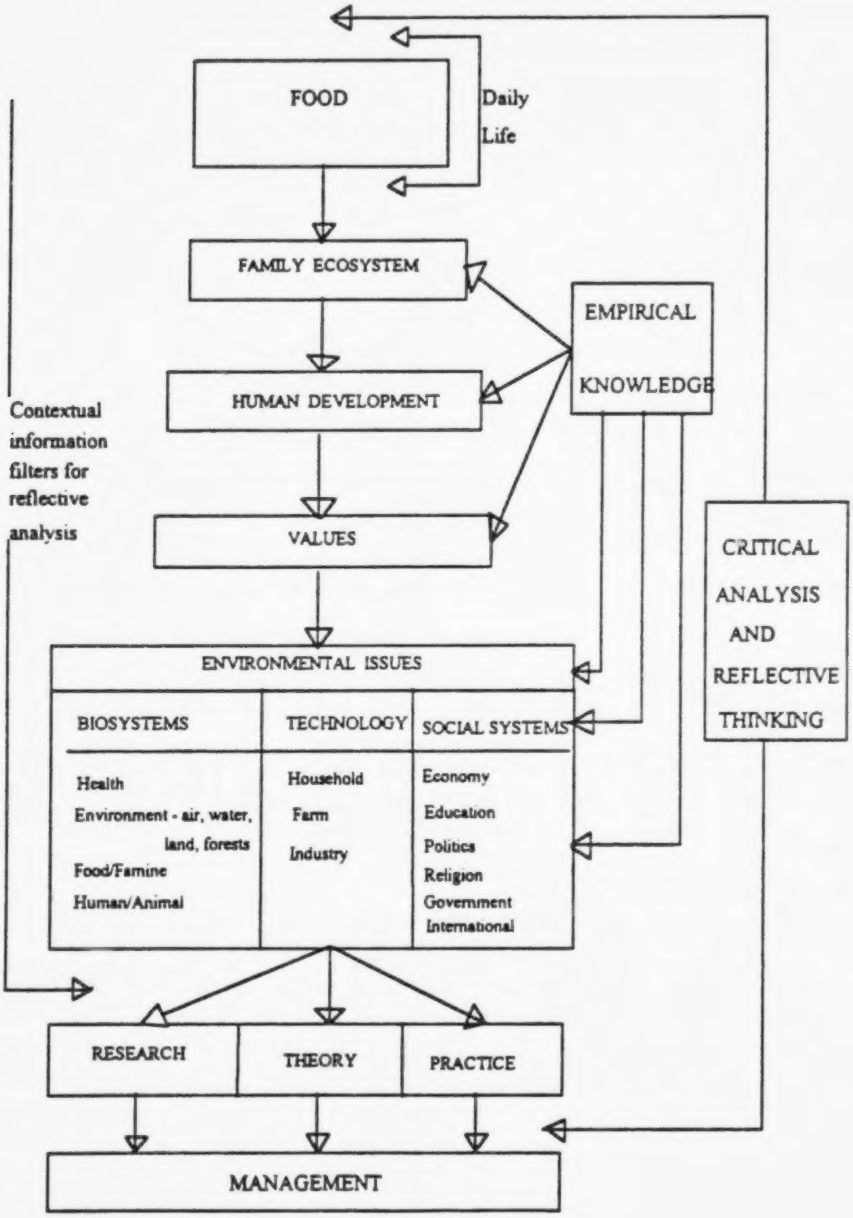
° Seek to uncover the assumptions involved in answering such questions.
° Knowledge is recognized as being socially selected and organized for specific audiences.
° Researcher takes a total view of the "systems" involved and how they interrelate.

* Nutrition inserted to apply to present study.

Appendix 6

Figure 2

Contextual Model for Nutrition Education with Low Income Groups Factors to Consider in Solving Malnutrition


FOOD
Daily
Life
FAMILY ECOSYSTEM
EMPIRICAL
KNOWLEDGE
HUMAN DEVELOPMENT
Contextual
information
filters for
reflective
analysis
VALUES
CRITICAL
ANALYSIS
AND
REFLECTIVE
THINKING
ENVIRONMENTAL ISSUES
BIOSYSTEMS
TECHNOLOGY
SOCIAL SYSTEMS
Health
Environment - air, water,
land, forests
Food/Famine
Human/Animal
Household
Farm
Industry
Economy
Education
Politics
Religion
Government
International
RESEARCH
THEORY
PRACTICE
MANAGEMENT

(Adapted from Badir, 1991)